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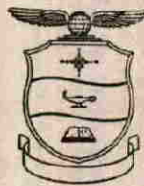
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The Development of the German Air Force, 1919-1939

by

Professor Richard Suchenwirth

DO NOT LOAN



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Edited by Mr. Harry R. Fletcher
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*For some reason,
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USAF HISTORICAL DIVISION
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Generaloberst Hans von Seeckt
in his Thoughts of a Soldier

FOREWORD

The Development of the German Air Force, 1919 to 1939, written by Professor Richard Suchenwirth, and revised and edited by Mr. Harry R. Fletcher, is one of a series of historical studies written for the United States Air Force Historical Division by men who had been key officers in or outstanding authorities on the German Air Force during World War II.

The overall purpose of the series is twofold: 1) To provide the United States Air Force with a comprehensive and, insofar as possible, authoritative history of a major air force which suffered defeat in World War II, a history prepared by many of the principal and responsible leaders of that air force; 2) to provide a firsthand account of that air force's unique combat in a major war, especially its fight against the forces of the Soviet Union. This series of studies therefore covers in large part virtually all phases of the Luftwaffe's operations and organization, from its camouflaged origin in the Reichswehr, during the period of secret rearmament following World War I, through its participation in the Spanish Civil War and its massive operations and final defeat in World War II, with particular attention to the air war on the Eastern Front.

The German Air Force Historical Project (referred to hereinafter by its shorter and current title, "The GAF Monograph Project") has generated this and other especially prepared volumes which comprise, in one form or another, a total of more than 40 separate studies. The project, which was conceived and developed by the USAF Historical Division, was, upon recommendation of Headquarters Air University late in 1952, approved and funded by Headquarters USAF in early 1953. General supervision was assigned to the USAF Historical Division by Headquarters USAF, which continued principal funding of the project through 30 June 1958. Within the Historical Division, Dr. Albert F. Simpson and Mr. Joseph W. Angell, Jr., respectively Chief and Assistant Chief of the Division, exercised overall supervision of the project. The first steps towards its initiation were taken in the fall of 1952 following a staff visit by Mr. Angell to the Historical Division, Headquarters United States Army, Europe, at Karlsruhe, Germany, where the Army was conducting a somewhat similar historical project covering matters and operations almost wholly of interest to that service. Whereas the

Army's project had produced or was producing a multiplicity of studies of varying length and significance (more than 2,000 have been prepared to date by the Army project), it was early decided that the Air Force should request a radically smaller number (around 40) which should be very carefully planned initially and rather closely integrated. Thirteen narrative histories of GAF combat operations, by theater areas, and 27 monographic studies dealing with areas of particular interest to the United States Air Force were recommended to, and approved by, Headquarters USAF in the initial project proposal of late 1952. (A list of histories and studies appears at the end of this volume.)

By early 1953 the actual work of preparing the studies was begun. Col. Wendell A. Hammer, USAF, was assigned as Project Officer, with duty station at the USAREUR Historical Division in Karlsruhe. General der Flieger (Ret.) Paul Deichmann was appointed and served continuously as Control Officer for the research and writing phases of the project; he also had duty station at the USAREUR Historical Division. Generalleutnant (Ret.) Hermann Plocher served as Assistant Control Officer until his recall to duty with the new German Air Force in the spring of 1957. These two widely experienced and high-ranking officers of the former Luftwaffe secured as principal authors, or "topic leaders," former officers or specialists of the Luftwaffe, each of whom, by virtue of his experience in World War II, was especially qualified to write on one of the topics approved for study. These "topic leaders" were, in turn, assisted by "home workers" -- for the most part former general and field-grade officers with either specialized operational or technical experience. The contributions of each of these "home workers," then, form the basic material of most of these studies. In writing his narrative the "topic leader" has put these contributions into their proper perspective.

These studies find their principal authority in the personal knowledge and experience of their authors. In preparing the studies, however, the authors have not depended upon their memories alone, for their personal knowledge has been augmented by a collection of Luftwaffe documents which has come to be known as the Karlsruhe Document Collection and which is now housed in the Archives Branch of the USAF Historical Division. This collection consists of directives, situation reports, war diaries, personal diaries, strength reports, minutes of meetings, aerial

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The complexity of the GAF Monograph Project and the variety of participation which it has required can easily be deduced from the acknowledgements which follow. On the German side: General Deichmann, who, as Chief Control Officer, became the moving force behind the entire project, and his assistant, General Plocher; General Josef Kamhuber, a contributor to, and strong supporter of, the project, who became the first chief of the new German Air Force; Generaloberst (Ret.) Franz Halder, Chief of the German Army General Staff from 1938 to 1942, whose sympathetic assistance to the project was of the greatest value; the late Generalfeldmarschall Albert Kesselring, who contributed to several of the studies and who also, because of his prestige and popularity in German military circles, was able to encourage many others to contribute to the project; and all of the German "topic leaders" and "home workers" who are too numerous to mention here, but whose names can be found in the prefaces and

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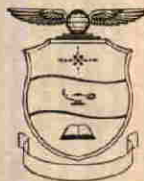
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PREFACE

The Treaty of Versailles (signed by Germany on 28 June 1919) allowed the Reich to maintain an army defense force of 100,000 men, a small naval force of 15,000 men, and no air forces at all. The Army was to be a professional body in which enlisted men would be required to serve for 12 years and officers for 25 years. The Navy was outfitted with a few antiquated vessels, while the Army was equipped with arms of World War I vintage. The construction of both tanks and aircraft was proscribed by the terms of the settlement. The German Army (Reichsheer) thus became a sort of reinforced police force, intended mainly for use against incursions along the eastern border next to Poland.

Of the great powers, France was by far the most concerned with maintaining the status quo of Versailles, and immediately took steps to establish strong mutual-assistance ties with Poland, Czechoslovakia, Rumania, and Yugoslavia. As a result, Germany, reduced in size and prestige, recognized that the reconstruction of its armed forces would have to be accomplished (at least in great part) by means of subterfuge and deception.

Bitter internal political struggles hindered the recovery of German's economy and the reconstruction of its armed forces. The military clauses of Versailles also had an important bearing upon matters. Aviation activities on German soil were out of the question, since the meticulous scrutiny of the Inter-Allied Control Commission would have quickly ferreted out even the most insignificant effort to establish flying organizations, to produce military aircraft, or to convert civil aircraft to military uses. In such circumstances it was natural that the German aviation industry would fall far behind its foreign counterparts.

These handicaps forced Germany to seek a partner which would permit German aircraft firms to establish factories on its soil, and which would allow German airmen to train there as well, outside the limitations of Allied treaties. Of the nations which ranked among the great powers in Europe after 1919, only the Soviet Union was comparable to Germany in being universally disliked by the Allies, and in presenting a suspicious picture. Both had lost more in the war than they had gained and both saw little reason to expect benevolence from the Western Allies.

Generaloberst Hans von Seeckt, reflecting upon this situation, noted that "people become bound to each other against other nations more from common hatred than from common friendship for each other."

In 1922, the German Foreign Minister, Dr. Walther Rathenau, signed the German-Russian Commercial Treaty at Rapallo, an agreement which contained, as the Allies suspected, a secret military clause. This allowed the Reich to make use of the Soviet airfield at Lipetsk for research, development, and training, and to construct a substantial aircraft factory at Fili, near Moscow. At the same time, armored equipment and chemical warfare items were to be tried out at Kazan in the Volga area. This new arrangement permitted all sorts of experimentation without fear of Allied interference. German officers could thus take part in Soviet maneuvers, and could freely experiment with military air tactics. During the 1920's more than 180 Reichswehr officers (most of whom later became Luftwaffe officers) received practical schooling in aviation in the Soviet Union.

While the German government allotted 80,000,000 Reichsmarks for the construction of the Junkers plant near Moscow, the Defense Ministry began the first theoretical steps toward establishing personnel and logistical requirements for a future German air force. These preparations had to be made in the utmost secrecy, since every move was fraught with the danger of political, and even military, repercussions. This policy of tight secrecy continued in full effect until 1929, by which time growing international financial crises diminished the need for the most stringent security measures.

Actual planning for the establishment of a first class air force within the framework of the Army did not come about before 1928. Estimates of the German industrial potential of the time suggested that 7,000 aircraft could be constructed for the Army and another 1,700 for the Navy by the end of 1929. This idea was scarcely within the bounds of reality, for Germany was beset with shortages of all kinds of raw materials, fuel shortages, and deficiencies in the areas of engine and airframe design and construction, and air armaments and munitions. The Army Command was not overly concerned inasmuch as it reckoned almost solely with the possibility of an encounter with Poland.

Broadening the basis of the aviation buildup came about concurrently with the expansion of the Army. It may have been a natural result of the experiences in Russia that caused so many Army officers (and even some airmen) to view air power as an entity designed for the support of field armies. Some subsequent Luftwaffe officers found themselves torn between the concepts of Douhet and the argument of a "land strategy." The result was a peculiar mixture of "longing for a strategic air force" while acting almost entirely in the direction of "close support." Even in World War II German air leaders could not free themselves from the bonds of this divisive outlook. The Russians, as events were to show, never saw air power as anything but an army support force.

German air leaders from 1928 on had excessively optimistic estimates of the Reich's industrial capacity. This led to an almost pathological belief that German industry was capable of doing "the impossible." Only late in World War II was there an effort to put industry completely upon a war footing, but, by that time it was too late to offset years of poor direction.

When Hitler came to power in 1933 the air forces of Germany were hardly comparable to the two senior services. The entire Wehrmacht was faced with raw material shortages, and an overly-hasty buildup of the air armament industry caused considerable duplication of effort and waste of time and materials. The requirements for the entire armed forces, but especially the Luftwaffe, were for "too much, too soon," a factor which was responsible for producing a sizeable and rapidly expanding Army, and a growing Navy and Luftwaffe, but ones which in the final analysis stood on "shaky legs."

The Nazi rise to power brought in Hermann Goering as Reichs Minister of Aviation and Commander in Chief of the Luftwaffe. As number two man in Germany, Goering was in a position to advance his Luftwaffe, sometimes at the expense of the Army and Navy. In addition, the plethora of offices conferred upon him by Hitler gave additional prestige to the Luftwaffe, an important factor in the course of an arms race between service branches, especially in the contention for iron and steel allotments.

Goering's plan to make use of the airline Lufthansa as the foundation stone of a new and independent air force was soon dropped, since the aircraft flown by Lufthansa were too outmoded

for modern military purposes, and the conversion of commercial aircraft types to military models was a difficult and time-consuming proposition at best. The Luftwaffe, a unique and colorful branch of service, was under great pressures to prove that it deserved its independent status and that it was capable of being a decisive factor in winning a war. In 1933, Goering began to build his so-called "Risk Air Force" (Risiko-Luftwaffe), and, within two years, both he and Hitler felt confident enough to announce the existence of this new entity to the world.

Until 1938, the buildup of the Luftwaffe progressed remarkably well, a fact which was recognized by leading aviation authorities in several major nations. But, the buildup of this force was made at the expense of vital, long-range planning in the areas of training, logistics, and strategic air power. Could one have expected a different outcome, considering the fact that the Luftwaffe's builder was not a professional soldier, and surely no strategist? Goering was, in short, a "political soldier," a term which the Nazi Party loved to use. Was it not logical then, that the air forces, in his hands, would become as much of an instrument of politics as was the National Socialist Party? Too much attention was paid to this possibility to the neglect of underlying and more eternally vital aspects of aviation. It could not be denied, however, that the "Risk Air Force" played an important role in both the Austrian and Czech crises.

Until well into World War II, Goering sought to prove the decisive capability of the Luftwaffe as the single element capable of bringing a campaign to an end, but neither his leadership nor his understanding of the use of air power were commensurate to the tasks at hand. He remained confident that the Luftwaffe could annihilate an enemy's forces by a sudden, overwhelming attack before the enemy could strike. However, he neglected to note that Douhet envisioned the execution of such an attack with the assumption that every possible sort of personnel, materiel, and psychological resources would be readily available and would continue to be available throughout the course of the attack.

From the standpoint of logistics, training, the organization of the higher echelons of command, and industrial mobilization, the Wehrmacht's expansion, especially that of the Luftwaffe, left much to be desired. Mighty as German military power seemed to be in 1938 and 1939, it was capable only of accomplishing isolated European campaigns. Leaders of the High Command knew that the

Wehrmacht was not ready for successful offensive operations at that time, and their pessimistic views were to lead to direct conflicts with the Fuehrer. This Goering was able to avoid for at time. Perhaps the mistakes and omissions might have been largely rectified had the Luftwaffe been able to peacefully outlive its growing pains, to establish itself in depth, and to improve organizational and development problems in the fields of aircraft production and command and leadership. The caprices of Hitler did not allow the necessary modifications, and the results are now a part of history.

ABOUT THE AUTHOR

Professor Dr. Richard Suchenwirth, a well-known and somewhat controversial German and Austrian historian, author, teacher and lecturer, was born in Vienna on 8 October 1896. Until 1934 he pursued the career of teacher in his native Austria. He became a citizen of Germany in 1936, and, until 1944, was Director of the Teacher's College at Munich-Pasing. In the final year of World War II he was a Professor of History at the University of Munich. Europas letzte Stunde? (Europe's Last Hour?), the last of his many books, was published in 1951.

Professor Suchenwirth's interest in military history dates back to his childhood when he memorized accounts of Hannibal's battles and traced the great general's campaigns on his father's maps. A lieutenant in World War I, he served as an aide to an Austrian general and learned much at firsthand concerning the problems of leadership.

Probably no other historian has interviewed as many of the highest ranking officers of the German Wehrmacht as has Professor Suchenwirth. He has enjoyed a particularly close association with all of the contributors of the GAF Monograph Project and is thoroughly familiar both with their work for the USAF Historical Division and with the documents which have been brought together in the Karlsruhe Document Collection.

In his own words, Professor Suchenwirth's interest in military history ". . . lies not in any affection for militarism, but rather in the realization of the extent to which freedom and the greatness and fate of a people are dependent upon military decisions; of how many human lives, how many brave soldiers and people behind the front are affected by good or bad leadership in time of war."

LIST OF FIGURES

	Page
1. Generaloberst Hans von Seeckt, Reichswehr Chief	4
2. Colonel Hermann v.d. Lieth-Thomsen, Chief of Field Flying Forces	5
3. Captain Ernst Brandenburg, German Aviation Pioneer	14
4. Glider soaring in Rhoen Area, 1926	14
5. Interior of Junkers Factory at Fili, U.S.S.R., 1926	15
6. German Personnel of the Junkers Factory at Fili, U.S.S.R., 1925	15
7. Aviation Branch of the Reichswehr, 1930	26
8. I-21 Aircraft at Lipetsk, U.S.S.R., 1927	27
9. K-30 Aircraft at Lipetsk, U.S.S.R., 1926	27
10. Commanders in Chief of the Wehrmacht Branches, 1937	53
11. Hermann Goering as Chief of the Storm Troops (SA), 1923	54
12. Goering as Chief Game Warden of Germany, 1937	54
13. Generalleutnant Walther Wever, first Chief of the Luftwaffe General Staff.	59
14. Erhard Milch, State Secretary of Aviation	60
15. Fighters of the new Fighter Wing "Richthofen"	91

	Page
16. The Dornier Do-17 Bomber	92
17. The Heinkel He-111 Bomber, which became a Luftwaffe mainstay	97
18. The "Super-Speed Bomber" of the Luftwaffe, the Ju-88	97
19. A 1933 Curtiss "Hawk" similar to those pur- chased by Udet	98
20. The Arada Ar-68 E Fighter	105
21. The Luftwaffe's long-range fighter, the Me-110 .	105
22. The Henschel Hs-126 Reconnaissance Aircraft . .	106
23. Generals of the Flak Artillery Ruedel and von Axthelm	109
24. An 8.8 cm. Flak crew during the 1936 War Games .	110
25. Typical modern barracks at a Luftwaffe base . .	141
26. Luftwaffe personnel relaxing on mess hall patio.	141
27. An early transport and Luftwaffe bomber, the Ju-86	142
28. The standard Luftwaffe dive-bomber, the Ju-87 "Stuka"	161
29. Focke-Wulf 189 Tactical Recon and Multi- Purpose Aircraft	161
30. A modern Luftwaffe Mess Hall, 1938	162
31. Mathematics Institute, Luftwaffe Tech. Academy, Berlin-Gatow	165
32. Inspection of a new class, Luftwaffe Air War College	165
33. French Officers visiting Fighter Wing "Richthofen", 1938	192

CONTENTS

	<u>Page</u>
FOREWORD	v
PREFACE	ix
ABOUT THE AUTHOR	xv
LIST OF FIGURES	xvii
CHAPTER 1. GERMAN MILITARY AVIATION FROM THE ARMISTICE OF 1918 TO THE ESTABLISHMENT OF THE REICHS AVIATION MINISTRY 1 MAY 1933	1
The End of the Old Air Force and the Beginning of a New Era	1
Early Stages in the Rebirth of German Aviation	4
Further Aviation Developments	11
Rapallo and Lipetsk	11
The German Lufthansa (<u>Deutsche Lufthansa</u>)	14
The Paris Air Agreement and Sport Flying in Germany	14
Air Offices in the Reichs Defense Ministry, 1925-1929	16
The Reichs Defense Ministry	16
The Air Offices Maintained by the Army	17
Relaxation in the Need for Secrecy	19
T2 V (L) and its Missions	19
The German Aircraft Industry 1929 to 1933 . . .	21
Armament Contracts	24
Organization of the Training Program	26
German Aircraft Testing Stations	29
Preparations for Rearmament	34
Preparations for Mobilization	37
Steps Taken by the Navy Command to Provide for a Naval Air Force	41
Organizational Measures taken by the Navy Command	41

	<u>Page</u>
The Secret Build-Up	42
Air Agencies in the Reichs Defense Ministry 1932 and 1933	45
CHAPTER 2. THE GROWTH OF THE TOP LEVEL COMMAND APPARATUS	49
The Position of the German Luftwaffe within the Wehrmacht	49
Goering's Personality as a Factor in the Luftwaffe's Build-Up.	53
Germany's Air Command during the Period of Secrecy, 30 January 1933-1 March 1935. .	57
From the Official Beginning of the Luftwaffe to World War II	60
Organization and Mission of the Top-Level Command Apparatus	66
The Air Administrative Area Commands	69
Air Commanders (<u>Fliegerfuehrer</u>) and Air Divisions	70
CHAPTER 3. THE BUILD-UP OF THE LUFTWAFFE	74
Repercussions of Political Events upon the Luftwaffe	74
The Build-Up of Air Units	84
Measures Implemented by the Luftwaffe Command	87
The First Air Units	90
Bomber Units	95
Dive-Bomber Units	95
Fighter Units	96
Fighters for the Defense of Army and Navy Units	98
Long-Range Reconnaissance Units	99
Tactical Reconnaissance Units	100
Luftwaffe Signal Forces	101
Flak Artillery Units	106
Luftwaffe Meteorological Service	112
The Development of the Luftwaffe Ground Organization	115

	<u>Page</u>
Measures by the Ground Organization to Insure Mobility of Bomber Units	118
CHAPTER 4. THE AIR ARMAMENT INDUSTRY IN GERMANY	119
Raw Material Problems	122
Aviation Fuel	126
Aircraft Design and Procurement	128
Aeronautical Research in Germany	133
The Office of Luftwaffe Supply and Procurement	134
The Supply of Field Units	139
The Selection of Aircraft in the Luftwaffe	140
Tactical and Technical Requirements of the General Staff	141
The Technical Office	144
The Role Played by the Technical Office	147
Aircraft Production	148
Aerial Torpedoes	149
Introducing Aircraft at Troop Level	150
The Luftwaffe Administration Office	157
The Luftwaffe Officer Corps	163
Engineer Officers	164
The Luftwaffe General Staff	165
CHAPTER 5. LUFTWAFFE PREPARATIONS FOR THE WAR	167
Basic Thinking on the Strategic and Tactical Employment of the Luftwaffe	167
The Training of Top-Level Luftwaffe Leaders	171
War Games and Staff Journeys	171
Maneuvers	175
The Last Staff Training before the War	175
The Compilation of Operational Data	177
The Air Defense File	179
Deployment and Battle Instructions	179
The Luftwaffe Mobilization Plan	180
The Western Air Defense Zone	184
Measures in the Field of Training	186
The Military and Political Roles of the Luftwaffe before the War	188
The Luftwaffe as an Instrument of Political Policy	188

	<u>Page</u>
The Role of the Luftwaffe in the Pre-War Crises	192
FOOTNOTES	197
APPENDICES	219
LIST OF CHARTS	245
CHARTS	246

Chapter I

GERMAN MILITARY AVIATION FROM THE ARMISTICE OF 1918 TO THE ESTABLISHMENT OF THE REICHS AVIATION MINISTRY, 1 MAY 1933

The End of the Old Air Force and the Beginning of a New Era

Part V of the Versailles Treaty, signed 28 June 1919 and put into effect on 10 January 1920, prohibited Germany from undertaking any activity whatsoever in the field of military aviation and in the manufacturing of military aircraft, including weapons and equipment. Article 198, Part V, stipulated:

Germany is forbidden to maintain either land or sea forces She will not be permitted to retain any dirigibles.¹

Article 202 of the Treaty specified that Germany had to surrender:

. . . all her land and water aircraft, including any which may be in the process of manufacture, development, or construction.²

This surrender order also covered:

. . . aircraft engines, ballonets, and wings, armaments, ammunition, airborne instruments, wireless equipment, photographic equipment (including movie cameras).³

These demands meant the end of the German Air Force.

During World War I, in the face of steadily increasing American, British, and French air superiority, the German Air Force had challenged the enemy to the very end in the airspace over the front, and the bomber squadrons of the Army High Command (Oberste Heeresleitung) had penetrated deep into enemy

territory. At the same time, the German Air Force had provided effective protection for the German homeland area. In the end, if the Armistice had not intervened on 11 November, the dissolution of three German armies during the occupation of the Meuse-Antwerp line would have provided Generalleutnant Ernst von Hoeppner,* Commanding General of the German Air Force, with the opportunity of "assigning more than adequate air forces to the divisions and groups."⁴

This air force had proven itself in a total of 7,425 aerial victories, at a cost of 3,021 officers and 3,809 non-commissioned officers and enlisted men. Even in 1918 (the summer of which cost the lives of so many German airmen) the German Air Force reported the destruction of 3,732 enemy aircraft, with a loss of 1,099 of its own aircraft in the period from January through September.⁵ The young American Air Force, in particular, whose pilots attacked with such death-defying courage, suffered heavy losses at its hands.

In his final order of 21 January 1919, on the occasion of the demobilization of the Imperial German Air Force, General von Hoeppner praised his force in the following words:

The air units, the antiaircraft artillery forces, and the zeppelin groups, supported by their reliable weather service, have established an outstanding record at the front, a record whose brilliance increased more and more as the war progressed. The home air defense units, often in tiresome routine patrols, have spared those parts of the homeland which were threatened by enemy air attack from heavy losses in human life and devastating destruction of property.

All this has been possible only because of your incomparable courage, your alertness, and your devotion to duty. You were often hard-pressed in the unequal fight against a numerically stronger enemy, and yet you have proven yourselves to be superior to him.

Undeclared, the German Air Force complies with the Armistice. You may be assured of the gratitude of the Army and the Fatherland.⁶

*Editor's Note: See biographical section at the end of this study.

Following the demobilization, a small number of pilots were transferred to the Reichswehr (National Army), which was established on 6 March 1919, and whose nucleus consisted of volunteer units. By virtue of their membership in the Reichswehr, Air Force personnel took part in the crushing of rebellions in northern and central Germany as well as in border patrol actions set up to meet the Polish threat and the Bolshevik assault in the Baltic.^{7*} But these last remaining pilots also fell under the Treaty of Versailles, which had in the meantime been ratified. Thus, on 8 May 1920, after only ten years of existence, "a brave young arm of service silently and proudly laid down its arms."⁸ A number of other air units, which had transferred bodily to the Security Police (Sicherheitspolizei) prior to the demobilization order, suffered the same fate. Only the police units lasted until 1920, when they were permanently disbanded.

*Editor's Note: Throughout 1919 and 1920 Germany was torn by a series of serious Communist uprisings, which in Munich, Bavaria resulted in the establishment of a Soviet Republic (4 April 1919). These were all put down by the German government. The disorders caused in the Ruhr area by Communists (March 1920) were crushed with severity by the government. France retaliated against the German government for pursuing radicals into "off limits" areas by occupying the Ruhr and Frankfurt-on-the-Main, 6 April-17 May 1920. In the Baltic, German forces cooperated with Latvian forces to drive out Russian Bolshevik units which had invaded Latvia, 3 March 1919. When the Latvian government asked the Germans to leave at the end of hostilities, fighting broke out between the Latvians and Germans, which continued until 1920 when General von der Goltz and his forces returned to Germany.

/Generaloberst Hans von Seeckt's edict of that date mentions the demise of the old air forces.

at the time of the Kapp Putsch.*

Early Stages in the Rebirth of German Aviation

The Army Command (Heeresleitung) in charge of the National Army, which had been brought into being by the law of 6 March 1919 and subsequently modified to comply with the peace terms, was, until 1926, guided by the keen intelligence and firm determination of Generaloberst Hans von Seeckt.†† The Army Command was far from being a mere military adventure, as would have been the case under the prevailing circumstances if it had occupied itself with the reconquest of Germany's lost territories in the east or with an overt rearmament program. Instead, what was uppermost in the minds of von Seeckt and his staff was concern over a possible Polish invasion and annexation of East Prussia

*Editor's Note: A plot to overthrow the German government, instigated by General Walther von Luettwitz, Vizeadmiral Adolph von Trotha, and others, chief of whom was Dr. Wolfgang Kapp of Koenigsberg. The immediate cause was the government's order, pursuant to the Inter-Allied Control Commission directive, to disband two naval brigades stationed in Doeberitz under the commands of Lt. Commanders Werner Ehrhardt and Loewenfeld. These forces occupied Berlin 11 March 1920 and the government left the city. An appeal was made to the Reichswehr to oust these troops, but Generaloberst Hans von Seeckt, Reichswehr Chief, maintained a strict "hands off" attitude, declaring, "Truppe schießt nicht auf Truppe" ("Troops don't fire on the Troops.") The takeover lasted only five days after Berliners responded to Socialist calls for passive resistance.

†See General der Flieger a.D. Helmuth Felmy, "Luftfahrtausbildung der Reichswehr" (Aviation Training in the Reichswehr), Part I, "Vom Versailler Diktat bis Ende 1928" (From the Versailles Treaty [because of the fact that it was a dictated peace, Germans always called it the "Versailles Dictate"] to the end of 1928), and Generalleutnant a.D. Bruno Maass, "Organisation der Fliegerstellen im RWM 1920-1933" (Organization of Flying Positions in the Reichswehr Ministry 1920-1933), Karlsruhe Document Collection.

††See figure 1.

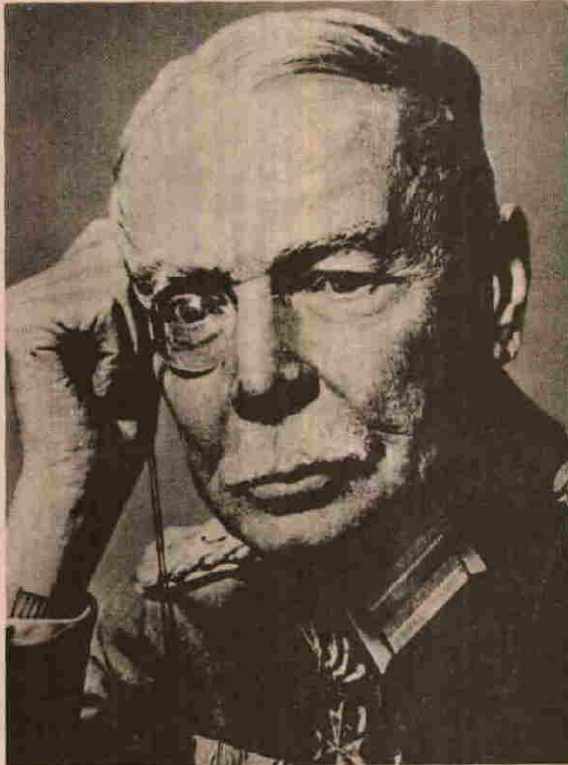


Figure 1

Generaloberst Hans von Seeckt, Chief of the
Troop Office and later Chief of the
Reichswehr. Founder of the
100,000 Man Army.



Figure 2

Colonel Hermann von der Lieth-Thomsen, Chief
of Field Flying Forces in World War I,
at his desk. A German aviation
pioneer.

or Silesia, in other words a problem which was purely defensive in character and thus fully in keeping with the task of the National Army, which was, after all, the defense force of the Reich.

Von Seeckt was keenly aware of the potential significance of the air forces which were denied Germany by the Versailles Treaty. Thus, "in defiance of the wishes of the 100,000 Man Army and of the serious objections voiced by the Army Personnel Office, von Seeckt ordered that 180 pilot officers, veterans of World War I, specifically selected by the commanders of Germany's former Air Force, be accepted into the National Army."¹⁰ Neither Colonel Hermann (Hans) von der Lieth-Thomsen,* organizer and actual commander of the German Air Force (who since 11 March 1915 had served as Chief of Field Flying Forces [Chef des Feldflugwesens]), after the Air Force had been officially separated from the Communications Forces, and since 8 October 1916 as chief of staff in the office of the newly created Commanding General, Air Force, nor Lieutenant Colonel Wilhelm Siegert, Air Force Inspector (Inspekteur der Fliegertruppen) since 31 July 1916, both extremely capable officers, joined the National Army.

Von Seeckt's alert intelligence and his farsighted evaluation of the potential significance of the air force -- he was so firmly convinced of its importance that he recommended that it be organized as a separate, independent branch of the armed forces -- rendered a great service to German military aviation.¹¹ Under the conditions laid down by the Versailles Treaty, to be sure, the National Army could do no more than to try to maintain interest in military aviation by establishing agencies which could at least keep up with developments in the field of aviation. These agencies soon became centers for aviation enthusiasts. Originally introduced as a stop-gap measure, they gradually developed into the nuclei and the cadres of a new German air force. In the words of General der Flieger Wilhelm Wimmer, "Seeckt used all of his influence and authority to protect his group of fliers against attacks all the way up to Cabinet level."¹²

*See figure 2.

On 1 March 1920, the following agencies were established:

a) An Air Organization and Training Office (TA L) within the Troop Office (Truppenamt)* of the Reichs Ministry of Defense. This office was directly subordinate to the Chief of the Troop Office, and remained so even after von Seeckt's retirement.¹³ In reality the central office for all questions pertaining to military aviation, this office bore the official designation "Air Defense Office", which was all the more appropriate after 1926, when the National Army was permitted an air defense branch (ground-to-air defenses only). It was under the command of Major Helmut Wilberg, who was assisted by a sergeant and a civilian administrator.

b) The "Foreign Air Office" (one officer), within the Foreign Armies Department (T-3) of the Troop Office. Its task was the compilation and evaluation of information concerning foreign air forces.

c) The "Air Technical Office," within the Office for Weapons and Equipment in the Army Ordnance Office (Heereswaffenamt). The officer in charge was Captain Kurt Student, and his mission was to follow aeronautical developments abroad in the field of technology. During the first few years of its existence, the Air Technical Office was purely a center for the compilation of information, restricted to preparing summaries of significant foreign publications and experiments for study by appropriate agencies of the National Army. Besides its primary mission, the Air Technical Office very early (1921) began to take an interest in the sport of gliding in the Rhoe~~n~~ and did a great deal to promote this activity.¹⁴

* Editor's Note: The Troop Office (Truppenamt) originally had a membership of about sixty persons. It was the secret continuation of the Great General Staff, and bore its traditions and spirit into the new Army. The Great General Staff had been outlawed by the Treaty of Versailles. See Walter Goerlitz, History of the German General Staff 1657-1945, New York: Frederick A. Praeger, 1962, pp. 218-219, 225-228, 241-243. See Chart No. 1.

† Editor's Note: A low mountain range located northeast of Hanau in the vicinity of Fulda, an area with abundant thermal updrafts, making it ideal for gliding activity. It has continued to be the most popular gliding area in Germany.

d) The "Air Armament Economics Office" (Fliegerruestung-wirtschaftliches Referat) or WaWiL, whose task it was to compile and evaluate information pertaining to developments in the sector of armament economy abroad. This office was under the direction of Captain Wilhelm Vogt.¹⁵

e) A procurement office was also planned, but, understandably, never came into being.

With the title of Special Duty Consultants, Air Consultant Offices consisting of one officer and two assistants, one of them an aerial photography officer, equipped with an archive of aerial photographs, were assigned to the seven Military Area Headquarters (Wehrkreis Kommandos) and, after 1929, also to the staff headquarters of the three cavalry divisions, where they did their best during training exercises, war games, and maneuvers, to see that both officers and troops were made aware of the potential uses of flying forces and air defense units. In addition, the 3rd Company 2nd (Prussian) Motor Transport Battalion, was assigned to carry on the tradition of the Prussian air units, and the 1st Company, 7th (Bavarian) Motor Transport Battalion, that of the Bavarian air units. Both companies remained in close contact with civilian aviation associations.¹⁶ The German Navy also created agencies to deal with aviation matters.¹⁷

Still there was no way for the National Army to procure even reconnaissance or liaison aircraft. Only on one occasion, at the time of the French march into the Ruhr District in 1923, was a fairly large sum of money approved for this purpose, and then only after von Seeckt had personally requested it in an interview with Reichs President Friedrich Ebert. The money was spent on 100 Fokker D-XIII aircraft (with 450 horsepower Napier "Lion" engines), which were purchased from the Netherlands.¹⁸ But these aircraft were delivered very late. Fifty of them (the older model) were sold to Rumania, while the other fifty were sent to Lipetsk in Russia for future training purposes.¹⁹

Paragraph 201, Part V, of the Versailles Treaty specified that:

For a period of six months after the present

Treaty goes into effect, Germany is forbidden to manufacture or to import aircraft or aircraft parts.²⁰

The Paris Agreements, which were announced on 29 January 1921, forbade the government of Germany to authorize the manufacture and import of aircraft and aircraft equipment until three months after the date on which the Inter-Allied Aviation Commission should have confirmed Germany's full compliance with Article 202.²¹ At the same time the German government was cautioned to interpret exactly all of the definitions laid down by the Allies in Article 198, distinguishing between permissible civil aviation and forbidden military aviation. Aircraft manufactured in Germany were not permitted to have speed capabilities greater than 195.5 miles per hours or ceiling capabilities higher than 13,120 feet.²²

These "definitions" did much to hamper developments when on 5 May 1922 Germany was at last in a position to authorize the manufacture and import of aircraft, insofar as they did not violate the provisions of Article 202 of the Versailles Treaty.²³ At this point, however, Article 314 came to Germany's aid:

However, subject to any regulations which Germany may enact, regulations which must be equally binding upon German aircraft and the aircraft of the Allies and their associates, the aircraft of the Allies and their associates shall have the right to fly over German territory and German sovereign waters, without landing, enroute to any other country.²⁴

It was this article which was later to lead to a complete disregard of the Allied "definitions." In the meantime, however, the German aircraft industry had no choice but to adhere strictly to those limitations, the only exceptions made being those connected with the manufacture of fighter aircraft for performance contests.

In order to get around the manufacturing ban imposed by the Versailles Treaty, German aircraft firms had established branch offices abroad. Their sales were fairly modest, but they did provide sufficient funds to maintain their construction offices. Junkers had established a branch office of this sort

in Sweden and at Rohrback in Holland, and Claudius Dornier established one in Switzerland and Italy, respectively. In complete disregard of the ban, the naval air pilot Carl Caspar had built in Travenmuende* a few of the aircraft designed by Heinrich Heinkel for sale to the United States and Japan, and had provided the Swedish Navy with designs and parts for its aircraft. After the ban was lifted in 1922, the Ernst Heinkel Aircraft Works, which was established in 1922 in Warnemuende, and later transferred to Travemuende, continued this activity.²⁵

By 1919, stemming from beginnings made during the war years (establishment of the German Air Transport Agency [Deutsche Luftreederei] in 1917), a modest network of air transport had developed, whose activity was occasionally hampered by the ban on aircraft construction and flying. As soon as construction activity was permitted once more in Germany, the German Air Transport Agency reappeared on the scene, together with some thirty other, similar, companies. Most of these firms merged into the German Aerolloyd Company, while Professor Hugo Junkers, in Dessau,† set up his own company, which soon established a number of subsidiaries, especially in Latin America.²⁶

The activity of the Aviation Department (Abteilung Luftfahrt), Reichs Ministry of Traffic, proved to be of great benefit for Germany's newly established aircraft construction firms as well as for the work of the Reichs Defense Ministry. As early as December 1918, the "People's Council" (Rat der Volksbeauftragten) had organized a Reichs Air Office (Reichsluftamt); the Aviation Department, more modest in scope but incomparably more effective in activity, was its successor. As the official representative of German aviation as a whole, the Department was the source from which foreign air and naval attachés received their information.

In late 1924, "at von Seeckt's intervention,"²⁷ Captain Ernst Brandenburg (Ret.) was appointed chief of the Department, with the rank of Ministerial Director (Ministerialdirigent).

*Editor's Note: Warnemuende is due north of Rostock on the Bay of Mecklenburg, while Travenmuende is northeast of Luebeck on the Bay of Luebeck.

† Situated in Sachsen-Anhalt southeast of Magdeburg and Zerbst.

Captain Brandenburg had won an enviable reputation as a bomber wing commander during the war, was a disabled veteran, and held the coveted order Pour le Mérite, the highest Prussian war decoration.* In this man, the Reichs Defense Ministry gained a reliable, cautious, and skillful worker as well as an understanding promoter of civilian aviation and sport flying.²⁸

It was in keeping with Germany's wish to retain its self-respect and to continue in the world of flying that gliding, which was a sport and therefore not subject to the restrictions of the Versailles Treaty, should have been actively promoted during the period in which the manufacture of motor-driven planes was proscribed in the Reich. Captain Kurt Student did everything in his power to support the sport of gliding, and in the summer of 1921 some of Germany's former pilot officers organized the first glider courses on the Wasserkuppe, ²⁹ a place ideally suited for this activity. On 1 January 1924, when

*First issued in 1685 under Frederick I, Elector of Brandenburg, as Orden de la générosité, changed at the accession of Frederick II (1740) to Pour le Mérite. Awarded for the most outstanding military feats, it was later conferred as a civilian order for remarkable achievements in art and science. A royal "house order," the military order was not issued after 1918.

²⁹ Assistant Director and Privy Councillor Wilhelm Fisch, long-time consultant in the Reichs Ministry of Traffic and later Chief of the General Air Office (Allgemeines Luftamt) in the Reichs Ministry of Aviation, told the author on 20 December 1957, "Brandenburg was assigned to the Reichs Office for Aviation and Motor Transport, established in December 1918, which was under the direction of August Euler, first as Deputy State Secretary and then as State Secretary. When Euler left in 1922, Brandenburg was transferred as Assistant Director to the Reichs Ministry of Traffic. He was still on crutches at that time. Both as a person (an excellent comrade!) and as an organizer, Brandenburg was outstanding. Between 1925 and 1933 he covered himself with glory. . . ." See figure 3.

³⁰ A high point in the Rhoe Mountains in Hessen, located north of Gersfeld, where gliding contests have traditionally been held. See figure 4.

inflation made all long-range planning pointless, the Sport Fliers Ltd. (Sportflug G.m.b.H.) was founded in Berlin by Director Fritz Siebel, with the help and backing of the Reichs Defense Ministry.

With sport aircraft, which complied in every way with the limitations laid down by the Allied "definitions," the association Sport Fliers Ltd. established flying schools in Koenigsberg, Stettin, Berlin-Staaken, Warnemuende, Osnabrueck (an aerial acrobatics school), and Schleissheim, schools which were distributed among the seven Military Areas (Wehrkreise). Former pilot officers, regardless of whether they belonged to the National Army or were employed in some civilian enterprise, were permitted to attend these schools in order to keep themselves in practice and up to date. The schools also trained flying enthusiasts of the younger generation, most of them coming from the "academic flying groups" established in the secondary schools.²⁹

In addition to these schools a number of private flying schools were established in Germany during 1924 and 1925, such as those at Fabeck and Co., Hanover, the Mark Aircraft Factory in Breslau, Dietrich and Gobiet in Kassel, the Aircraft Factory Kassel, private schools in Muenster and in Munich, and the Udet, Darmstadt, and Hanover Flying Schools (the latter two being the so-called academic or "Akaflieg" schools).^{30*}

Further Aviation Developments

Rapallo and Lipetsk

A new situation arose after the conclusion of the German-Russian Trade Agreement of 6 May 1921, when the Soviet negotiator Leonid Krassin began discussions with officers of the Reichs Defense Ministry regarding the build-up of the Russian armament industry with German aid. Seeckt himself received Karl Radek,

*In a study on flight and flying training by Werner Kreipe, Karl Gundelach, and Rudolf Koester (Karlsruhe Document Collection), the value of these schools is described as more "idealistic" than practical. The term "Akaflieg" is an abbreviation of Akademische Fliegergruppen an Technischen Hochschulen (Academic Flying Groups at Technical Colleges), later changed to Flugtechnische Fachgruppe (Flying Technical Specialist Groups).

the Russian representative, while still other negotiations were carried out by von Seeckt's co-workers, Maj. Oscar Ritter von Niedermayer, Col. (Ret.) Herman von der Lieth-Thomsen, Maj. Veit Fischer, and General Kurt von Schleicher (who held a number of meetings in his apartment), and most of all by Generalleutnant Johann Hasse.

Reichs Chancellor Joseph Wirth was kept informed of developments by von Seeckt. In 1922, during the Conference of Genoa, when the Allies tried to persuade Russia to demand reparation payments from Germany, the Chancellor was extremely eager for negotiations with the Soviet Union. This effort resulted on 16 April 1922 in the concluding of the Treaty of Rapallo between the Reich and Soviet Russia, an act which expressly freed Germany from any reparations payments to Russia and which introduced a series of trade agreements between the two countries.³¹ Soon after the conclusion of the Treaty, the West began to complain bitterly that Germany and the Soviet Union had also made a number of secret military agreements. Lloyd George, the leader of British foreign policy, appeared before the House of Commons to state that rumors of this kind were ridiculous, but at the same time he was honest enough to point out that these two great nations, both of which had been discriminated against, would probably form an alliance sooner or later.^{32*}

As a matter of fact, secret agreements were made, but not until the end of 1922, after lengthy negotiations between the Army Command and the Russians.³³ And these agreements were to have an extremely favorable effect upon the development of the German Luftwaffe, since Russia declared herself willing to place airfields and labor at the disposal of Germany for the testing of German aircraft and aircraft equipment. In return, Germany was to make available to the Russians the technical advances and

* In this connection the reader's attention is invited to a letter from von Seeckt to Generalleutnant Hasse, dated 17 May 1922, which states, "No political-military agreements have been reached although everyone seems to believe that such agreements may be possible."

+ Von Seeckt informed the new Reichs Chancellor, Dr. Wilhelm Cuno of this fact on 23 November 1922.

the experiences gained during the testing activity.

As early as February 1923 Germany sent a commission to Moscow under the direction of Generalleutnant Hasse, Chief of the Troop Office. One of its members was the Consultant for Aeronautical Technology, Office for Weapons and Equipment. The first step was the establishment of a liaison office in Moscow, known as the Moscow Center, which was subordinate to the Reichs Defense Ministry. The Center was headed by Col. (Ret.) Thomsen, using the pseudonym of von Litz, and later by Maj. (Ret.) Niedermayer. A number of German pilot officers and aircraft engine experts were placed at the disposal of the Red Air Force, which was then in its initial stage of development. During the course of further negotiations the Russian offer of an airfield was accepted with alacrity, and a flying school was established in 1924 at Lipetsk, situated near the Voronezh River about 310 miles southeast of Moscow.* Thanks to the farsighted planning of Generaloberst von Seeckt and to his insistence that appropriate agencies be established (including training and testing facilities) within the Reichs Defense Ministry, the foundation was laid for the new German Air Force.

As a further result of the Rapallo negotiations, the German government granted a generous subsidy to the Junkers Works in Dessau for the construction of a branch aircraft factory in Fili, several miles west-southwest of Moscow on the route to Mozhaysk. The branch factory existed from 1924 until 1927./

*According to Kreipe, Gundelach, and Koester, it was not until 1925 (after a year's hard work to put the field in order) that training courses for the instructor personnel were begun, and not until April of 1927 that the six months training course was established. The Lipetsk establishment was the first real training center for the German Air Force after World War I.

/General der Flieger (Ret.) Hellmuth Felmy states that the Reich contributed more than 100,000,000 Reichsmarks to the Junkers enterprises, most of which went to the branch factory in Fili. See also the strongly biased statements of a "Capt. Hermann" (pseudonym for a man who was supposedly a Junkers staff member prior to his emigration to the United States), in The Luftwaffe: Its Rise and Fall, New York: 1943. Inquiries and

It was obviously the Russians who profited most from this undertaking, which trained a large number of Soviet engineers, technicians, designers, and draftsmen.³⁴

The German Lufthansa (Deutsche Lufthansa)

On 6 January 1926 the German Defense Ministry established the German Lufthansa, arbitrarily merging all of the companies which had anything to do with civilian aviation. With the financial support of the government, the new company established a broad network of air routes, both at home and abroad, and soon developed into a firm to be reckoned with. The Lufthansa was clearly responsible for contributing a good deal of experience in both day and night flying, and it was this firm which deserved special credit for establishing blind-flying procedures, including those for take-offs and landings. Lufthansa crews continued to perfect these operations, and many foreign airlines learned a good deal from them.³⁵

The Paris Air Agreement and Sport Flying in Germany*

On the basis of Article 202, Part V, of the Versailles Treaty, the Reich had applied the Allied "definitions" to the aircraft of all the air powers which flew over Germany.[†] This particularly affected Great Britain, with its air routes to India, and the English were quite willing to come to some kind of an agreement. France, whose Franco-Roumaine airline continually disregarded German regulations and thought nothing of violating German air sovereignty which had been restored on 1 January 1923, was also ready to come to terms. The Franco-Roumaine airline had been unfortunate in that thirteen of its aircraft had been forced to make emergency landings on German

research by the author and by Field Marshal (Ret.) Erhard Milch, the latter of whom was personally and closely acquainted with the Junkers staff, have failed to reveal any possible Junkers staff man who emigrated to the United States during this period or immediately prior to World War II. See figures 5 and 6.

*This section is based upon written information provided to the author by Ministerial Director (Ret.) Willy Fisch, dated 7 September 1954.

[†]See p. 8.



Figure 3
Captain Ernst Brandenburg, World War I flyer
who assisted in the creation of the new
Luftwaffe.



Figure 4
Glider soaring over the Fliers' Memorial atop
the "Wasserkuppe" in the Rhoe area, 12 August 1926.



Figure 5

Interior of the Junkers Aircraft
Factory at Fili, near Moscow,
1926.



Figure 6

German personnel of the Junkers
Factory at Fili, U.S.S.R.,
February 1925.

territory, making them thereby liable to confiscation by the Reich. Thus negotiations began with an ambassador's conference in Paris, where Germany's air interests were represented by two Consultants from the Reichs Traffic Ministry, Drs. Alfred Wegerdt and Willy Fisch. After months of discussion, the Paris Air Agreement, which abolished the "definitions" was signed on 21 May 1926. As a result of this favorable agreement, all of the technological restrictions (including those pertaining to fighter aircraft) which had previously been applied to German aircraft were lifted, and even dirigibles could again be made. In return for these concessions, Germany had to promise that sport flying, as such, would not be supported by government or community funds. When, on 1 September 1926 the Aviation Guarantee Committee (Luftfahrt-Garantie-Komitee) also began its activity, Germany's air sovereignty was completely restored in the field of civil aviation.

Although the Paris Air Agreement did nothing to alter the Versailles Treaty ban on German military aviation, it did result in a certain measure of relief in that it permitted seventy-two National Army officers to take up sport flying, albeit at their own expense. The Agreement specified that half of this number might be composed of men who had had no previous flying training,^{36*} and the annual number of trainees was limited to twelve!

In compliance with the provisions of the Paris Air Agreement, which did away with government or community support of sport flying associations, the Sport Fliers Ltd. had to be disbanded.³⁷ Its assets were taken over in part by the German Commercial Flying School (Deutsche Verkehrsfliegerschule), established 1 April 1925, in part by Aviation, Ltd. (Luftfahrt G.m.b.H.), which was founded 1 April 1927, and in part by the Akaflieg groups, with their glider schools at Rositten and Darmstadt. The land and sea flying schools of the Commercial Flying School were intended primarily to provide an adequate supply of pilots, radiomen, and technical personnel for Germany's

*Ministerial Director Willy Fisch concludes his discussion of this meeting with the note, ". . . and we struggled six hard weeks to reach this trivial result."

commercial airlines, although the military had obvious interests in these developments. For a small fee, Aviation, Ltd. trained beginners in light sport aircraft for the private pilot's license, maintaining at the same time close contact with other sport flying associations and with the German secondary schools. The Commercial School training centers were at Berlin-Staaken, Schleissheim, Braunschweig, and Lipetsk. Along with this organization a body of airmen banded themselves together into a group known as the Society of German Fliers (Ring Deutscher Flieger). This was mainly a social group of both young and older pilots, an organization which also participated in a number of national and international air meets between the years 1925 and 1935. Some of its members were active officers in the National Army, and the Society kept a file on all pilots, observers, and gunners of World War I. Dr. Fritz Siebel was its last president.

So it was, that in the first six years after Versailles the Germans, by carefully and secretly circumventing some of the Treaty's restrictions on aviation, kept German military aviation alive and laid the groundwork for further quiet advances by the Luftwaffe from 1925 to 1933, when Hitler came to power and fully reestablished the German Air Force.

Air Offices in the Reichs Defense Ministry, 1925 - 1929*

The Reichs Defense Ministry

The Reichs Defense Ministry was organized along the following lines: Its political head was the Reichs Defense Minister, a civilian. Under him were the military chiefs, the Chief of the Army Command (Heeresleitung), and the Chief of the Naval Command (Marineleitung), all of whom were on an equal level. These in turn had various offices under them, each headed by an Office Chief (Amtschef), with the rank and authority of a divisional commander. There was also the Armed Forces Branch, which was directly subordinate to the Minister.³⁸

Each office was subdivided into a number of branches, each headed by a branch chief with the rank and authority of a

* See chart No. 2.

regimental commander. In very large offices, a number of branches might be consolidated into an office group, headed by an office group chief with the rank and authority of a brigade commander.

Every branch was composed of several groups, each of which was headed by a group leader, a person who had, however, no disciplinary authority. The group, in turn was made up of sections, each devoted to a particular field of activity. Each of these consisted of a consultant and, when necessary, of one or more auxiliary consultants. For reasons concerned with personnel distribution or work flow, there were also independent sections, groups, and branches which were subordinate to the next higher group leader or office chief. As a matter of fact, there were some groups which were directly subordinate to the Chief of the Army Command, the Chief of the Naval Command, the Chief of the Armed Forces Branch, or to the Defense Minister himself.

The Air Offices Maintained by the Army*

In 1925, thanks to the general relaxation of political tensions, it was possible to lighten the work load of the Air Organization and Training Office, which had heretofore been directly subordinate to the Chief of the Troop Office. At this time it was made subordinate to the Chief of the Army Command and given the new designation of Group T2 III (L). Henceforth, it was to devote itself primarily to matters of organization. The Chief of the Army Command ordered this group to act as the central agency for all matters pertaining to aviation.³⁹ Successive group leaders were Lt. Col. Wilhelm Wimmer, Maj. Hugo Sperrle, and Maj. Hellmuth Felmy.

As of 1926, the following agencies dealt with aviation questions for the Army:

- a) Group T2 III (L), which meanwhile had been expanded to

*See pp. 43-47 in connection with the matter of the air office maintained by the German Navy.

include the Foreign Air Office in the Foreign Armies Department (T-3);

b) Group V of the Office for Weapons and Equipment in the Army Ordnance Office (to handle questions about the manufacture of aircraft and equipment);

c) Groups Wa 1 and WaB 6 (in connection with air armament procurement).⁴⁰

This, of course, represented a rather extensive decentralization and distribution of the work load among the several offices and, in the case of Group V, various sub-branches inevitably turned out to be somewhat of a hindrance. The office in charge of the entire operation, the Air Organization and Training Office (T2III[L]) was authorized to submit requests, but no orders, to the agencies making up Group V. Group V itself had the authority to make independent decisions with respect to the granting of compliance to these requests. Heated differences of opinion were the inevitable result, especially since the Aviation Group (T2) could scarcely avoid intervening from time to time in the work of the Office for Weapons and Equipment in the interests of the cause as a whole.

On 1 February 1926, Group WaB 6 (Procurement) and Group Wa Pruf 6 (Technical Development and Testing) were combined to form a new group, Wa L, under the leadership of Captain Helmuth Volkmann.⁴¹ This did much to centralize the agencies working on air matters, at least inside the Office for Weapons and Equipment. The original organization, whereby the offices in charge of development, testing and procurement were all on the same level, was abandoned in favor of a more vertical structure.

At about the same time the Air Organization and Training Office was redesignated T2 V (L). In 1928, in his capacity as "simplification expert" (Vereinfachungskommissar), Major Albert Kesselring suggested the establishment of an "air inspectorate" (Flieger-Inspektion). In a letter dated 14 December 1928, the Chief of the Army Organization (T2) Office, Major Wilhelm Keitel, approved this suggestion in theory, but also pointed out that foreign policy considerations would necessarily prevent its realization for years to come. Keitel did indicate that the new

Group Wa L could be simplified, but this was not done until 1933, when the overall reorganization was carried out.*

Relaxation in the Need for Secrecy

T2 V (L) and its Missions

On 1 February 1929 Major Felmy was appointed Chief of the Air Operations and Training Office (T2 V [L]), a post fraught with difficulties because his requests for funds had to be made in competition with those of colonels and generals.

Generalmajor Werner von Blomberg, Chief of the Troop Office, believed Felmy's requests to be justified and promised him that they would be given favorable consideration, but von Blomberg's resignation from the Troop Office delayed matters until 1931, when the Air Operations and Training Office was finally raised to the status of a branch.

The Training Inspectorate (In 1) in the Reichs Defense Ministry then became the cover for German air activities. The former T2 V (L) Group was then called Inspectorate 1 (L), while the real Training Inspectorate units came under the office designated as Inspectorate 1 (W). The Chief of the Training Inspectorate, Generalmajor Hilmar Ritter von Mittelberger, in addition to his original duties, also took over the branch Inspectorate 1 (L), with Felmy as his Chief of Staff.†

With this step, military aviation was placed under the command of an officer of general's rank, who, as Inspector, was no longer subordinate to an office chief, but, rather, to the Chief of the Army Command. However, all important and basic planning continued to be handled under the direction of the Troop Office in its capacity as the Army General Staff.

*Editor's Note: Resistance to change was partly enhanced by the financial straits in which the Reichswehr found itself, and Keitel was usually most reluctant to suggest the alteration of any existing policies. See Walter Goerlitz, ed., The Memoirs of Field Marshal Keitel, Chief of the German High Command, 1938-1945, (Translated from the German by David Irving), New York: Stein and Day, 1966, pp. 15-17.

†See figure 7. See also Chart No. 3.

This new air branch exchanged opinions and experiences from time to time with the Aviation Group established by the Naval Command.⁴² To the detriment of overall development, inter-service planning was never a feature of this relationship. Yet, the Chief of the Army Command designated the In 1 (L) Branch as the top organ of authority for all matters pertaining to military aviation. The branch represented a service which, even though it did not as yet officially exist, had already begun to make extensive demands.

Within the Reichs Defense Ministry the views concerning the potential employment, effectiveness, and organization of the Luftwaffe were many and varied. For example, the Operations Branch (Fuehrungsabteilung or T1) of the Troop Office prepared a study on strategic air operations in which the authors reached the conclusion that air forces were of very little practical effect. At that time, of course, the stage of development attained in the field of airframe and engine construction was far from meeting the necessary requirements of strategic air operations. In addition, Germany then had no thought of waging an offensive war, which naturally would have required an application of the principles of Douhet.

During the period 1925-1933, the Inspectorate 1 (L) and its predecessor enjoyed an annual budget of approximately 10,000,000 Reichsmarks, approved by the Defense Office (Wehramt) of the Army Command Staff. This permitted the establishment of the four-year plan, in accordance with which the money was to be used for the development, testing, and procurement of aircraft, aircraft engines, air armaments, and special equipment for the training program and for the maintenance of facilities at Lipetsk, which alone cost 3,000,000 Reichsmarks per annum. These funds came from the so-called "Blue Budget," which was diverted from the overall public budget of the National Army and was administered by the Chief of the Army Command Staff (Defense Office), who was responsible to a special body. Expenditures from the "Blue Budget" were checked by a special branch of the Reichs Audit Office assigned to the Army Command Staff.

The Training Inspectorate 1 (L) was divided into sections (Referate) for the following fields of endeavor: Section I (Strategy and Tactics); Section II (Officer Personnel); Section

III (Air Technology); Section IV (Foreign Air Forces); Section VII (Air Defense); Section VIII (Flying Training); and Section IX (Meteorological Services); Financial planning was handled by Section IV.

The leaders of Sections I, V, and VII were General Staff officers and were either former pilots or newly trained ones. Their assistants were all former pilot officers from the old German Air Force, most of whom took care to keep in flying practice.

Almost all of the activity of the Inspectorate 1 (I) was carried out under top secret conditions. This required constant camouflaging and the tightest security measures, which made the work even more difficult. All the Lipetsk trainees, for example, as well as all of the officers assigned to the Center in Moscow, had to be discharged from the service (on paper) only to be reactivated later on. This was the only way to get around the Versailles ban on sending military missions to foreign countries. After all, there were no laws or regulations which forbade former officers to establish flying training schools abroad or to indulge in flying wherever they might choose. The connection between the National Army and this illicit activity had to be so camouflaged that it could never be proved.

The German Aircraft Industry, 1929 to 1933

Ever since 1925 there had been a close contact between German military leaders and the German aircraft industry, which had meanwhile reestablished itself. The Heinkel firm in Warnemuende was awarded contracts for the production of a training plane (HD-32), a close reconnaissance aircraft (HD-17), and a long-range reconnaissance aircraft (HD-33).⁴³

By the beginning of 1929 eight aircraft and four aircraft engine plants existed in Germany. The aircraft plants were the Albatros, Arado, Bavarian Aircraft Works (successor organization to the Udet and Messerschmitt plants), Dornier, Focke-Wulf,

Heinkel, Junkers,* and Rohrbach. The aircraft engine plants were the Argus, Bavarian Engine Works (Bayerische Motoren-Werke or BMW), Junkers, and Siemens.

The Heinkel, Junkers and Dornier firms were the most important in the field of fuselage construction, many details of which had clearly been adopted from foreign companies, while the Bavarian Engine Works (BMW) and Junkers were the leaders in aircraft engine construction, a field in which Germany was far behind other countries which had not suffered from any pause in their developmental work.^{44/} The Junkers firm had undertaken the development of a crude-oil engine for long distance flying. As far as the Bavarian Engine Works was concerned, an inspection visit in 1929 revealed that it was trying to develop too many different kinds of engines simultaneously, and, apart from the standard 500 horsepower BMW VI engine, there seemed to be no development program that pointed toward the future.

It was estimated that it would take five to seven years to increase the power of the BMW VI engine from 500 to 800 horsepower, and this achievement was absolutely necessary if Germany was to catch up with other countries and provide herself with a foundation for further development. Inspectorate I (L) succeeded in gaining approval of both civilian and military aviation agencies for a liquid-cooled engine, whose horsepower-weight ratio was to be kept as low as possible. Since the engine would have inverted cylinders, it would be possible to install a 20 mm.

* See references to Dornier and Junkers in Georg W. Feuchter's work, Geschichte des Luftkriegs (History of the Air War), Bonn: Athenaenum Verlag, 1954. See also Generalingenieur a.D. Gerbert Huebner, "Die Entwicklung der Flugzeuge von 1926-1933" (The Development of Aircraft from 1926 to 1933), C/IV/4, Karlsruhe Document Collection.

/ Prior to 1933, Germany had to get along with foreign aircraft engines, such as the Napier "Lion," Bristol "Jupiter" and "Jaguar," and the Pratt and Whitney "Hornet." These were imported in small quantities and used in the development (under cover, of course) of her military aircraft. In this connection the reader's attention is invited to a study by Generalingenieur Gerbert Huebner (Ret.), "Der tatsaechliche Ablauf der Aufgabenstellung (Planung) und Auswahl der Flugzeuge fuer die deutsche Luftwaffe" (The Real Course of Planning and the Selection of Aircraft for the German Luftwaffe), 1956, Karlsruhe Document Collection.

machine-gun behind it. In the autumn of 1930, the Reichs Traffic Ministry, which had been given the responsibility for the development of this "standard engine," called for bids to develop it as a 30-liter engine. The Ministry assigned the job to the Bavarian Engine Works and, after some hesitation, also to the Daimler-Benz firm, which had not built any aircraft engines since the end of World War I. It was the latter assignment which assured the success of this complicated and costly undertaking, for the design prepared by the Bavarian Engine Works turned out to be a failure. In 1936 (after a time span of seven years), the first Daimler-Benz DB-600 engines were ready for use.

Shortly thereafter, the Junkers firm was asked to develop a 20-liter engine, which was later installed in the first Me-109's, manufactured by Professor Willi Messerschmitt.*

The economic slump of 1930 affected German aircraft industries. The Albatros Company, the Bavarian Engine Works, and the Rohrbach Company went out of business, and even the Junkers plant was in serious financial difficulties. On the other hand, the slump resulted in a healthy pruning of the facilities of production in the aircraft field. Unfortunately, there was difficulty in establishing as firm a basis of cooperation with the Junkers firm as with, for example, Heinkel and Dornier. Junkers had developed some extremely interesting aircraft models abroad, a twin-engine bomber and a two-seater fighter aircraft known as the K-47, and two models of each were purchased for experimental purposes.

*Editor's Note: The Me (Bf) 109 was designed in 1934 to replace the outmoded biplanes the Arado (Ar)68 and the Heinkel (He) 51. The original test model was outfitted with a 695 horsepower Rolls-Royce "Kestrel V" engine, and easily beat out its competitors in the trials at Travemuende in 1935. The first operational Me-109 B and C models saw service in Spain during the Civil War. 30,573 were manufactured during World War II, making it the most highly produced aircraft type during the war. See Karlheinz Kens and Heinz J. Nowarra, Die Deutschen Flugzeuge 1933-1945. (The German Airplanes 1933-1945), Munich: J. F. Lehmann Verlag, 1961, pp. 415-416. Cited hereafter as Kens and Nowarra, The German Airplanes.

Junkers was working on something entirely new with the crude-oil engine. But the considerably greater weight of this double-piston engine could be offset by a lower fuel consumption only after the first 1,230 miles and distances of this extent were out of the question as far as the National Army was concerned. It was clear that the Navy's aviation personnel were more interested than the Army in the engine in view of the greater range requirements necessary for naval operations.

Armament Contracts

In the beginning there had been a notable lack of healthy competition in the awarding of contracts by the National Army. Finally the Office for Weapons and Equipment and the Reichs Traffic Ministry agreed to award contracts to two separate firms simultaneously. It was necessary for the tacticians to inform the technicians of their requirements in the field of flight performance for the various aircraft models. On the basis of "tactical requirements" worked out by the T2 V (L) Branch, the Group Wa Prüf 8 in the Office for Weapons and Equipment set up the prerequisites and invited the companies involved to submit appropriate designs and cost estimates.* Strictest security regulations were necessary and the German aircraft industry really had no choice but to accept the severe security restrictions which were invoked. These precautions, however, did effectively put a stop to foreign espionage.

Bids for the armament program for 1929-1933 were delayed until the winter of 1929-1930. The designs were deliberately restricted to a few models, which included a long-range single-engine reconnaissance plane which could be used as a daytime bomber, a short-range, single-engine reconnaissance aircraft to be used for combat reconnaissance, and a single-seat, single-engine fighter aircraft to meet the needs of modern air warfare. A number of earlier models, which were admittedly a credit to the ingenuity of their designers but which failed to come up to expectations, were dropped from the development program; in most cases the engines were too weak or the aerodynamic characteristics were in some way unsatisfactory.

During the first years after the war, the term "emergency armament" (Notruistung) came into use. This meant that in the

* See Chart No. 4

event of mobilization Lufthansa aircraft would have to be requisitioned for employment as reconnaissance or bomber aircraft. In preparation for such a contingency, rather primitive supplementary equipment had been installed in them.*

And now these stop-gap measures were to be replaced by a systematic development program. A commercial aircraft, designed in accordance with entirely different principles and intended to meet entirely different needs, could never take the place of a bomber. Nevertheless, the Troop Office considered its "emergency armament" program adequate and refused to approve the development of a bomber. After the failure of all its efforts to change the Troop Office's decision, the T2 V (L) Branch decided to develop a twin-engine reconnaissance aircraft which could later be modified into a bomber.

Prior to 1929, the technical agencies of the Office for Weapons and Equipment were physically separated for reasons of security. Only the main offices in charge of development and testing and procurement and economic planning were located in the office itself. Outside agencies had been set up to deal with the development of airframes, engines, instruments and equipment, weapons, and bombs. In addition, there was the testing station at Rechlin and the Production Ltd. (Fertigung G.m.b.H.) Company. All of these agencies were staffed with well-trained civilian personnel who, as security regulations gradually relaxed, were managed by the Office for Weapons and Equipment as government employees. By means of a more rational organization, the Wa Prüf 8, which, at the end of 1928 had been assigned the three main missions of development, testing, and procurement managed to increase the performance of the individual groups.⁴⁵ Captain Paul Jeschonnek, who was to have been appointed

* A circular track for a flexible machine-gun had been installed in the upper part of the fuselage and a bomb-release mechanism had been fitted to the outside wall of the fuselage. Bombs had to be fed into the release mechanism by hand. The variety of models of bomb releases, most of which were badly obsolete, and the great difference in their performances made it absolutely ridiculous to think in terms of concentrated bomber operations with the equipment on hand.

Chief of Wa Pruf 8, was killed in an air crash in June of 1929. His death was a serious loss to the German Air Force.^{46*}

It was not until 1 October 1929 that Captain Wimmer, who had been in charge of the Technology Section in T2 V (L), succeeded Captain Volkmann as Chief of Wa Pruf 8 (Development, Testing, and Procurement). Wimmer was just the man to assure close cooperation between the two offices.

Organization of the Training Program

During the years 1925 and 1926 the secret roster of pilot officers contained about 180 names. This number was naturally insufficient for the establishment of an air force comprising 1,000 aircraft, as envisioned by the mobilization plant at that time. The biggest problem was the lack of a younger generation of fliers. After lengthy negotiations with the appropriate agencies of the Reichs Traffic Ministry, the Chief of the Army Command authorized the introduction of refresher flying training. Sixty men were to be selected each year for a training course lasting eighteen months, which consisted of one year of theoretical and practical training in Germany, followed by six months of practical training at Lipetsk in the Soviet Union. Of the 60 selectees, 30 were to be National Army officers (30 percent of whom might be without previous flying experience), while the other 30 officer candidates were to be ready to enter the armed forces. The former were known as Altmaerker, and the latter as Jungmaerker. The Jungmaerker were given one year's thorough flying and general technical training at the German Commercial Flying School at Schleissheim, where they earned their B-2 licenses.⁴⁷ Each year

* In an interview with the author on 16 February 1954, General der Flieger (Ret.) Hellmuth Felmy described Capt. Paul Jeschonnek as a much more gifted individual than his brother Hans, who later became Chief of Staff.

⁴⁷ In general, the material contained in this subsection is based upon the work of General Felmy and General der Flieger (Ret.) Wilhelm Speidel.

⁴⁸ The B-2 license indicated that the individual had successfully passed the commercial pilot's test.



Figure 7

The Aviation Branch of the Reichswehr, 1930:
Front Row, L. to R.: Frl. v. Marwitz, Frl. v.
Mirbach, Robert Wichterich (40 Years' Service
Anniversary), v. Zaborowski, Lambert, Schlunke;
Second Row: Bruno Maass, Walter Schwabedissen,
Fritz Loeb, Ullrich Grauert, Generalmajor Hilmar
Ritter von Mittelberger, Branch Chief, Hellmut
Felmy, Gehrken, Hermann; Third and Fourth Rows:
Pank, Stich, v. Buelow, Morell, Giesler, v.
Hollwede, Karl Drum, Werner Kreipe, Rudolf
Bogatsch, v. Ledebour, v. Karmainsky.



Figure 8

I-21 aircraft at the Lipetsk
Airfield in Russia, 1927.



Figure 9

K-30 aircraft at the Lipetsk
Airfield, U.S.S.R., winter
of 1926.

the ten candidates who demonstrated the greatest aptitude for fighter pilot training were sent to Lipetsk for six months. The four-week refresher courses which then followed at the schools of Aviation, Ltd., in Wuerzburg and Boeblingen -- Robert Ritter von Greim was the director of the latter school* -- were admittedly inadequate, although there was never a shortage of instructor personnel.

In Lipetsk, on the other hand, everything had to be built up from scratch. The field was already occupied by Russian air units when the Germans arrived, and German and Russian air activities had to be kept strictly separated. By the summer of 1925, after completion of a fairly extensive construction program, including the erection of hangars, repair depots, billets, administration and medical buildings, and even a spur-line to the nearby railroad station of Lipetsk, it was possible to start some minor equipment tests and training courses. All of the activity there had to be carried out on a "civilian" basis, with the permanent instructors being recruited from Lufthansa or from flying schools in Germany, placed under a firm contract, and paid in dollars. Preference was given to younger graduate engineers (Diplomingenieure) / who often had received their education at the expense of the Air Training Inspectorate (In 1 [L]).

Beginning in 1929, the carefully selected fighter pilot instructors were assigned to a fighter training squadron, where they had to accomplish the training program and work out the Fighter Manual.⁴⁷ The Manual contained not only the entire schedule of training, but also the air drill regulations, flying in groups of two or three aircraft, formation flying, acrobatics, high altitude flying, air-to-air and air-to-ground firing, bombing practice, aerial combat practice, etc. In aerial combat practice, in which two squadrons of nine planes each faced

* Editor's Note: According to Luftwaffe personnel records, von Greim headed the school at Wuerzburg.

/ Editor's Note: German universities do not offer the Master's Degree, and seldom offer the equivalent of a Bachelor's Degree, except in certain special fields. In these, a diploma is awarded for the regular four-year course. In the case of engineering students, the four-year graduate is then called a diploma (Diplom) engineer.

one another, the use of camera guns proved to be very valuable. The Fighter Manual not only covered fighter tactics and operations, but also contained principles and guidelines applicable for commanding fighter units.

Most of the aircraft used in the fighter training program were Fokker D-XIII's, and because of its poor climbing performance the main emphasis was placed upon low-level attack drills. Air-to-air radio equipment was in the developmental stage at that time. The later introduction of ground-to-air equipment considerably facilitated training.

Newly constructed HD-17's and Albatros 76's were used in observation training, while commercial aircraft were utilized as "flying classrooms" for bombing and navigational training. In the secret courses held in Berlin, the observers could be given competent and valuable preliminary schooling, but in 1927 and 1928 this did not include observation exercises from aircraft.

At Lipetsk, German officials were fortunate in obtaining excellent skilled personnel for the exacting technical work and repair activity which was carried out there. Russian Air Force soldiers and civilians were employed as technical assistants, but the mechanic assigned to each German aircraft was always a German. However, Russian civilians soon proved to be very skillful workers. During the period from 1925 to 1933 about 120 highly trained fighter pilots graduated from Lipetsk, and from 1928 to 1930 approximately 100 observer officers were trained for the aerial reconnaissance units.^{48*}

At the same time, German officers also participated in Russian troop exercises and maneuvers, particularly in the Voronezh area, thereby gaining experience with respect to the employment of air forces in tactical military operations. As far as the Russians were concerned, the direct air support of ground operations represented the primary mission of air forces. The German aircraft used at Lipetsk and in the Voronezh area were either ferried to Lipetsk as "mail-planes," or transported by water from Stettin to Lipetsk via Leningrad.

* See figures 8 and 9.

German Aircraft Testing Stations

The Reichs Defense Ministry took over the testing station near Mueritz Lake at Rechlin, Mecklenburg for the technical testing of aircraft. The existence of this center was not generally known, especially since it had not been completed during World War I and since it was not accessible by any main traffic artery. After 1925 it was camouflaged under the name "Testing Station Rechlin of the Reichs Formation of the German Aviation Industry." As such, it remained virtually unknown to the outside world, even after 1933 when it was much more fully developed and utilized. The Rechlin base tested no weapons during the formative years of the Luftwaffe, and all trials requiring the use of arms or specific military-tactical operations were carried out in the Soviet Union.

Lipetsk became the principal German testing center in the late 1920's, and was devoted to all sorts of military testing programs as well as to the military flying training program. Air armaments and aircraft to be used at Lipetsk often flew in directly from East Prussia. The tremendously high cost of maintaining the Lipetsk base led to a demand in Germany for economy measures, forcing the Army to drop its plans for expanding the flying training program there.

The Fokker D-XIII's which were used at Lipetsk were obsolete and could only be used as training aircraft. The very thorough training program given there kept the number of crashes to a minimum, so that it was not necessary to continue sending the Napier "Lion" engines back to England for overhauling, nor was it necessary to spend time and money repairing worn-out airframes in the repair shops at Lipetsk. Instead, worn-out airframes were scrapped, and the testing and training activities went on with a steadily decreasing reserve of aircraft. For purposes of the training program, the observation aircraft manufactured in Germany were newer and better suited to operations at Lipetsk.

Cooperation with the ever-suspicious Russians was quite often extremely difficult. Misunderstandings arose to interfere with the German use of the troop maneuver area at Voronezh, especially during the summer of 1929. The Russians were determined to keep all visitors from seeing too much of their military installations, while they attempted to keep everyone else under careful surveillance. The customs officials in Leningrad and

Bigosovo caused countless delays in the delivery of supplies and equipment from Germany, and, since there was so much in the way of consumer goods and equipment that was not made nor available for purchase in the Soviet Union, practically everything necessary for the technical training and testing program, down to the last bolt, had to be brought from Germany. These difficulties were later surmounted when the Russians finally gave the Reich permission to set up its own customs office in Lipetsk.

The Germans were much more cooperative about keeping the Russians informed about their development projects, since, after all, the testing of all of their new aircraft, weapons, and bombs was being carried out at Lipetsk, in the Soviet Union. Moreover, Germany felt a certain sense of gratitude toward the Russians for taking an interest in its problems at a time when the rest of the Allies held rigidly to the concept of repressing all military developments in the Reich. Russians were usually about the Lipetsk area, and in May and September of each year, when the chief of the German air arm visited the base -- this was for the beginning and conclusion of the regular technical testing and training periods -- there were conferences with Red Air Force representatives in Moscow. Every year, usually late in the autumn, a high official of the Red Air Force -- generally Colonel S. A. Mezheninov, the Operations Officer -- came to Berlin for further negotiations. In February 1930, for instance, the Commander in Chief of the Red Air Force, General Yakov Ivanovich Alksnis, accompanied by Col. Mezheninov, took part in an air defense conference at Bayreuth, Bavaria. All of this created a certain degree of mutual confidence between the two nations, which did much to facilitate the work at Lipetsk.

The Russians, always eager to learn, were particularly interested in the technical testing program scheduled for the summer of 1931. Russian pilots were permitted to fly the German test models, and it was always clear that the Red Air Force selected its very best men for this assignment. As far as the new aircraft models were concerned, the Focke-Wulf close reconnaissance aircraft failed to come up to expectations. The parallel model, the Heinkel He-46, on the other hand, proved to be quite adequate for the established requirements. In addition to the He-46, a number of other models were tested, including the He-45, a medium-range daylight bomber, and the He-45 designed as a strategic reconnaissance aircraft, the Arado Ar-65, a single-seat fighter, the Junkers K-47, a two-seater fighter with a built-in machine gun with a greatly increased field of traverse,

and the twin-engine Dornier Do-11 (equipped with retractable landing gear which had to be operated by hand) designed to be used as a bomber and an aircraft weapons testing plane. This included the testing of radio and communications equipment.

The Russian flying demonstrations that took place soon afterward at the Khodinka airfield near Moscow revealed that the Soviet Union was still quite far behind in the field of aircraft development. However, they did not show or demonstrate their twin-engine bomber, the TB-3.* It was clear that the Russians profited a great deal more than the Germans from the testing and experimentation at Lipetsk, but the availability of the station was nevertheless of tremendous value to the Reich, since, even after the control of the Inter-Allied Aviation Guarantee Committee had been set up, Germany was not able to test weapons, aircraft, or bombs on its own territory. The Reich was thus eager to maintain the Lipetsk station, although on a more modest scale than had originally been the case, once some of the experimental activities had been transferred back to Germany. With a partial relaxation of foreign policy tensions and the strengthening of Germany's national status, German leaders could afford to be a bit more open in their activities with respect to the outlawed reestablishment of military power.

Many curtailments were made in the budget for testing and training and the maintenance of the facilities at Lipetsk for the fiscal year 1930-31. This was partly a result of an awareness that Germany had to make up for lost time in other fields of military activity, and partly because of the bids received for construction of new aircraft models. As the volume of equipment and supplies for Lipetsk gradually decreased, the Russians began to suspect that Germany would soon be withdrawing its units from the Soviet Union. These suspicions were intensified by the fact that the Reichswehr had not used the troop

* Editor's Note: Although the original TB-3 was a large twin-engine bomber, it was later redesigned as a four-engine bomber, carrying a crew of five or six, with a range of 456 miles carrying 3,307.5 lbs. of bombs at a cruising speed of about 99 miles per hour. This was a typically massive Soviet bomber of the early 1930's. See Wilhelm von Langsdorff, Handbuch der Luftfahrt Jahrgang 1939 (Handbook of Aviation, Year 1939), Munich: J. F. Lehmann Verlag, 1937, p. 344. Cited hereafter as Handbook of Aviation, 1939.

maneuver area at Voronezh since 1930. The Voronezh area had been utilized for firing practice and observation training, and, with the sudden departure of the Red air group for the Far East, the German guests had become undisputed masters of the entire installation. When Germany informed the Red Air Force in 1931 that no observer training was foreseen for Lipetsk for the summer of 1932, the Russians concluded that German intended to abandon all of its testing in the Soviet Union. Also, during the 1931 autumn maneuvers in Silesia, when Reichs Defense Minister, Generaloberst Wilhelm Groener, severely criticized the manner in which "enemy" aircraft had been simulated (using acoustical signals and a large number of small balloons drifting with the wind), the chief of the German air forces suggested to him that the fighter testing and training squadron in Lipetsk (which comprised the majority of German fighter instructors) should be disbanded and reorganized into three "show-piece" squadrons (Reklamestaffeln) of four planes each.* Russian suspicions that Germany was bringing its testing and training program in Russia to an end were confirmed in the autumn of 1932, when aircraft used for observation training and much of the testing equipment were sent back to the Reich.†

The base at Lipetsk had gradually become more and more a center of technical testing as time went on, and the Russians were disappointed not to see more tactical training exercises. In the course of a conference in Moscow in October 1932, the Russians demanded that the Lipetsk airfield be fully occupied and utilized by German air forces as it had been before, and that all military aircraft in Germany be transferred back to that station. Furthermore, the Red Air Force insisted upon

* The Fighter Manual (Jagdfliegervorschrift) was finished, and there was a sufficient number of fighter instructors available. The "show-piece" squadrons were to be stationed at Koenigsberg, Berlin-Staaken, and Fuerth (near Nuremberg), where suitable facilities were available. There, besides making stunt flights for various firms, they would be convenient for use by the National Army during field exercises. Only in this way could the air officers convincingly demonstrate the role of air power in a future encounter. The squadrons were ready by 1932 and subsequently were quite successful.

† After the Spring of 1932, observation training was carried out at Braunschweig (Brunswick), while Rechlin assumed ever greater importance for technical testing. See p. 29.

seeing a demonstration of German massed night bombing operations. The German representative pointed out that the Reich did not have any mass formations of bombers, and that, although test models designed for operations of this sort had been publicly exhibited to the Russians in September 1931, no procurement program had yet been initiated for their construction. He then suggested that the Russians, who had meanwhile made such strides in training and technology, might be better able to demonstrate such operations to the Germans. This terminated the discussion on this matter.

The reestablishment of activity at Lipetsk on its previous scale would have cost the Air Training Inspectorate (In 1 L) an additional 3,000,000 Reichsmarks annually. The Chief of the Army Command refused to approve the request for funds in that amount from the Army budget, and, when he failed to persuade the Foreign Office to bear the burden of continuing activities at Lipetsk, the matter was dropped. The appeal to the Foreign Office was probably more of a "trial balloon" in any case, than a serious proposal.

The flying training of National Army personnel and the testing of aircraft continued at Lipetsk until the early summer of 1933, when a series of experiments were brought to a close. Late in the summer the Army ordered the deactivation of the station. Although the conflicting attitudes between the Eastern mentality of the Russians and the Western outlook of the Germans had been sharpened by the advent of the National Socialist Regime in the Reich after 30 January 1933, and, although the Russians were most reluctant to see the German base close, they ultimately did nothing to interfere with the disbanding of the station.

German officials turned over all stationary equipment, everything that was not worth taking back to Germany, and all of the older Fokker D-XIII's (fifty of them) to the Soviet Union. In return, but only after the most stubborn negotiations, the Russians allowed the Germans to fly their experimental aircraft back to Germany.⁴⁹ The station complement, including the Jungmaerker,* returned home without mishap, and the equipment -- which was shipped in a number of freight trains -- arrived safely back on German soil. In disbanding the Lipetsk airfield, which

* See p. 26.

was particularly valuable for the winter testing of aircraft and for military flying, an important and interesting period of activity in the National Army came to a close, political deliberations having won a victory over logical military considerations.⁵⁰

Preparations for Rearmament

The first large-scale preparations by industry to enable it to keep pace with the scope of the Luftwaffe build-up were undertaken about 1928 and 1929. The goal was the development of an air force commensurate with the National Army's estimated 21 divisions. There were a great many obstacles to be overcome: financial difficulties -- particularly in view of Germany's economic depression --, the danger of rapid obsolescence of stockpiled equipment, the ban on aircraft stockpiling, and the inadequate overall capacity of German industry for armament production.

Despite these problems, in an effort to prepare for rearmament in consonance with modern methods, Lt. Col. Wilhelm Keitel,* at that time Chief of T2 V (L), ordered his staff members to acquaint themselves with the latest technological developments and to find out whether the testing of appropriate foreign designs might not be faster and cheaper for Germany than the development of its own aircraft. German developmental activity was continued, however, in the hope that the Reich would eventually move out ahead of other nations. Keitel demanded "simple, easily workable designs," a "simplification of equipment in all sectors." He was not interested in development without restrictions!

In the field of air armament, where development was going ahead by leaps and bounds, Keitel's requirements could be applied only with qualifications. The Air Training Inspectorate could not afford to make any fundamental changes in the apportionment of its 10,000,000 Reichsmark budget (4,000,000 each for development and testing, 2,000,000 for procurement) without running the risk of being hopelessly inferior, not only numerically, but also technically and from a point of quality, to a potential enemy. If the planned project was to become a reality, it was imperative that considerable funds be earmarked for industrial

* See p. 19. Keitel was promoted to Lt. Col. 1 February 1929. See also Chart No. 2.

plants which were less financially stable than many of the larger concerns, but which were more willing to cooperate.

The planned production quota was 2,293 aircraft for the Army and 750 aircraft for the Navy. An estimate of German industrial capacity indicated that in 1929 it would be possible to produce 7,006 aircraft for the Army and 1,746 for the Navy. However, this was only an estimate. In reality, the build-up of the Luftwaffe was delayed partly by the fact that the German plants were no longer accustomed to producing large quantities of military aircraft, and partly by the impossibility of providing the necessary aircrews and ground organization personnel. In addition, insofar as existing equipment and projected additional equipment were concerned, there were tremendous difficulties to be overcome in the initial issue of aircraft engines, aircraft fuel, oil, airborne radio equipment, and bombs.

The Army, eager to motorize the majority of its units as soon as possible, turned out to be a stubborn rival for the Luftwaffe. Furthermore, the German engine industry as a whole was in the midst of a crisis. The attempt in 1928 by the Reichs Traffic Ministry to establish a reliable group of engine plants to cater to its needs had been a failure. There was some discussion of the possibility of importing aircraft engines from abroad. A Ministry memorandum of 13 April 1929 summarized the situation as follows: "It is by no means certain that the military-political constellation of a future war would necessarily result in an encirclement of Germany which would prevent us from importing foreign-made engines by way of neutral nations."⁵¹

The memorandum mentioned the existing supply of repaired engines and pointed out that during a war only one engine would be lost for every two airframes. Thus the gap between engine and airframe production was not, after all, particularly dangerous.

As far as aviation fuel was concerned, supplies were estimated at 150,000 tons, comprising 100,000 tons of gasoline and 50,000 tons of benzol. Germany's annual production amounted to about 135,000 tons (25,000 tons of gasoline, 10,000 tons of benzol, and 100,000 tons of synthetic gasoline). Thus the initial issue for the entire armed forces could be covered by the stocks already on hand, still leaving 105,000 tons available for the continuous requirements of the Wehrmacht (Armed Forces) and industry. The requirements of the first two months could

thus be met from the supplies on hand plus the monthly production of 11,250 tons. From the third month on, there would be only the monthly production total from which to draw, and the last little bit of the existing supply, 425 tons, was too small an amount to have a significant effect upon operations.

The oil situation was less favorable in 1928, since the Reich had no oil production facilities of its own. The initial issue to the Wehrmacht (5,000 tons) could be met from the existing supply of 50,000 tons. It was planned to divide the remainder as follows: 16,200 tons to the Army, 7,200 tons to the Navy, 900 tons to the air defense agencies, 9,000 tons to industry, 8,100 to the Army air units, and 3,600 tons to the Navy air units.

Airborne radio equipment would not be ready for issue for at least six months.

There was a small supply of 27.5 lb. bombs on hand. Bomb cases could be delivered after the first month. Procurement of the explosives needed for the filling was difficult. The same was true in the case of the 110 lb. (50 Kg.) and 661.5 lb. (300 Kg.) bombs. The industries simply did not have an adequate number of large presses available. When the transition was made to cast steel bombs, a decision which was not made until later, requirements could finally be met by bringing in a number of extra firms.

All of these calculations were based on the initial issue to the Wehrmacht branches. The Ministry memorandum gives ample evidence of the highly unsatisfactory equipment situation in the following statement:

If, in the course of time, a real armament mobilization program should come into being, resulting in the activation of a large number of air units, then it is clear that these units, from the very first day of activation, would need to be steadily supplied, and this is something for which no provisions have as yet been possible.⁵²

Yet, in spite of this, the memorandum rejected any thought of limiting the production of airframes. Instead, it recommended making every effort to overcome the existing difficulties.

Industry was reluctant to approach its new task. There was

little chance for profits, since in the beginning the orders were only placed for individual parts or for the rebuilding of older aircraft. Aircraft manufacturers were therefore hesitant to enlarge their plants and to invest more capital in their operations. The new aircraft, which would not be going into production until later, as well as the accessories and individual parts involved, were pre-constructed only as far as the blueprint stage and were subsequently altered and improved in accordance with the latest technological advances. Of course, all of this was very expensive. Partly out of negligence and partly for reasons of competition, the principle firms often failed to inform the secondary firms, which were scheduled to take over the manufacture of individual parts, of any changes made or of any experience gained in the meantime which might be applicable to the manufacturing processes. It sometimes developed that parts built in individual construction were useless when mass-produced by machine. Finally, however, the Reichs Defense Ministry, through painstaking work which was hampered considerably by the requirements of security and deception, succeeded in obtaining the machinery and production facilities which would be needed when it came time for the large production orders.

On 29 November 1930, the Reichs government was prevailed upon to lift the confining ban upon aircraft stockpiling.⁵³ An attempt could then finally be made to provide combat-worthy aircraft, weapons, and equipment for the still more or less provisional air units which were to be activated in accordance with the mobilization calendar.

Preparations for Mobilization

A mobilization calendar, similar to those of the Army and the Navy, was established for the Luftwaffe from the years 1925-26. Known as Calendar A (~~A-Refender~~), it was expanded each year to keep pace with personnel and materiel development. Until the armament production program -- which gradually got under way in 1928 and 1929 -- had begun to bear fruit, it would be impossible to activate more than eight reconnaissance squadrons, three fighter squadrons, and a provisional bomber unit composed of three squadrons. In the interests of improved quality and increased supply levels, no fundamental changes were made in these Calendar A quotas until 1932-33. In the event of mobilization, or in the event that the political situation should permit the reestablishment of a peacetime air force, it was planned to expand the activation program in keeping with the preparations

being made in the field of production.

It was estimated that each month of war would bring requests for the replacement of 25 percent of the reconnaissance aircraft and 50 percent of the fighters and bombers. In the meantime, testing had been completed on the Albatros L-75, L-76, and L-78, all of which were now available as reconnaissance aircraft.

Thus far only the Fokker D-XIII's in Lipetsk were available to equip the fighter squadrons, and it was extremely doubtful whether the Russians would permit them to be returned to Germany in the event of mobilization. The bomber units were to be temporarily equipped with commercial aircraft from Lufthansa. The military equipment which would have to be installed, as well as the airborne weapons and other auxiliary equipment needed for the other squadrons, was already available in the Army mobilization supplies.

Moreover, in the event of mobilization, the entire Lufthansa and the German Commercial Flying School, with all of their aircraft, personnel, spare part warehouses, repair shops and facilities, were to be requisitioned in accordance with the Reichs Service Law (Reichsleistungsgesetz) and turned over to the Luftwaffe. Calendars were also set up for the establishment of training schools for flying and technical personnel and for the elaboration of the wartime top-level command structure of the Luftwaffe. To carry out these arrangements a number of flying personnel were available: (1) about 200 officers on the secret pilot roster (most of them observers), including those who had had advanced military flying training at Lipetsk, (2) the Jungmaerker pilots, those from the Commercial Flying School in Schleissheim to serve as reconnaissance pilots, and those from Lipetsk as fighter pilots; (3) the Lufthansa pilots for assignment to the provisional bomber squadrons, if qualified; and (4) airborne radio personnel, also from Lufthansa.

As we see from the above, the majority of the fliers were to come from Lufthansa. As far as other personnel categories were concerned, there were small cadres, such as flying radio operators, which were available in the National Army, and these could be increased in number through the conscription of former soldiers with the necessary backgrounds. In addition, after 1930 there were the pilots and technical personnel belonging to the "showpiece" squadrons. There were seven of these to begin

with, and their number later was increased to ten.

Commercial airfields were to be used for the activation of the military flying units. In case of mobilization, available personnel and materiel were to be assigned to units and organizations -- this included schools, staff headquarters, etc. -- as specified in the Calendar. Assignment would take place in accordance with previously prepared tables of strength and equipment.

Initial supply and equipment issue to the Luftwaffe, including the monthly replacement, consisted partly of typical Luftwaffe equipment such as aircraft and aircraft engines, airborne armament, bombs, airborne radio equipment, and some Army-type equipment, such as ground radio equipment, machine guns, small arms, etc. These Calendar A supplies were stored separately for the Luftwaffe and the Army. Separate storage had been ordered on 1 November 1932 in view of the different procedures involved and the different activation schedules. A supplementary order came out on 14 November 1932 from the Reichs Defense Ministry to the effect that Calendar A stocks were to be stored as close as possible to the activation areas. The order specified:

In practice this means that supplies will be stored with the peacetime units or organization serving as the basis for activation of the new entity. The present system of large supply collection points for one or more Calendar A divisions must be abolished. All other considerations must be made subordinate to the effort to facilitate the activation of the twenty-one division field army (Feldheer) as planned. The process of activation must be worked out in such a way that, in the event of mobilization, the Army can be available within seven days, in other words in less time than it took in 1914.⁵⁴

These directions, while suitable for the Army, could be applied only with great difficulty by the Luftwaffe, since the air forces had no peacetime units at whose stations the Calendar A supplies could be stored. Therefore it had no choice but to continue to adhere to the central storage scheme for the time being, and an amendment to the above order took this into

account:

1. This system, eminently suitable to the Army, cannot be put into effect in the Luftwaffe until Luftwaffe units actually exist. Until that time, the following procedure will be followed:

(a) Storage of supplies will remain centralized until the activation of the squadrons is certain with respect to equipment and types of aircraft.

(b) As soon as the distribution of materiel is decided, presumably in 1934, the same procedure as used by the Army will be followed, i.e., Calendar A supplies will be transported to the activation area concerned, where they will be stored under the auspices of the supply agency of the local Military Area.

2. As soon as the air units have been activated, Calendar A supplies will be stored at the units stations of the eight activation squadrons (Aufstellungsstaffeln), whose number will be doubled in the event of mobilization.⁵⁵

All of these preparations were purely defensive in character. German military leaders feared invasions of Reich territory by the Poles and even by the Czechs, such as in East Prussia and Silesia, invasions which they could not possibly hope to meet effectively with the miniature National Army permitted by the Versailles Treaty, and without an air force.

Therefore, Germany's defensive power had to be so strengthened that its eastern borders could be presumed to be secure. In the event of sudden hostilities, it would hardly be possible, on short notice, to establish an air force corresponding to a 21-division army. But, if mobilization came at a point when air armament production and the air training program were well under way, then a few air units could be activated immediately, with the majority of squadrons and groups to follow more gradually. An attack on German territory would bring about a number of factors whose repercussions could not be predicted in advance, such as, for example, possible changes in the importation of war materiel. It can therefore be seen that much of the planning had to be very long-range in character.

As previously noted, the preparations for mobilization often had to include improvisations. Germany's preparations had no legal basis, were largely dependent upon the voluntary cooperation of civilian agencies, and, all in all, were somewhat problematical at best.

Steps Taken by the Navy Command to Provide
for a Naval Air Force*

Organizational Measures Taken by the Navy Command

The Versailles Treaty permitted the German Navy to keep a few naval aircraft until 1920 in order to aid in the work of clearing mines out of the North Sea and the Baltic. It was this temporary mission which enabled the Navy to maintain its few Naval Air Stations, such as those at Nordeney in the North Sea and at Holtenau near Kiel.†

In contrast to the new National Army, the Navy was also permitted to keep at least some of its antiaircraft artillery, thus permitting it to continue training activity in this field. The Paris Air Agreement specified that one German Navy officer might be given pilot training each year.

Ever since about 1923 the Navy Command had set up agencies entrusted with the tasks of keeping the aviation idea alive and of supervising air training. These agencies also occupied themselves with questions pertaining to the tactical employment of naval air forces and with preliminary preparations for the activation of such forces in the event of mobilization.

* The reader's attention is directed to the contribution to this theme by General der Flieger Hans Siburg (Ret.), "Vorbereitende Massnahmen der Marineleitung auf dem Gebiet des Seeflugwesens in den Jahren 1920-1933" (Preparatory Measures of the Navy Command in the Area of Naval Aviation in the Years 1920-1933), A. V, Karlsruhe Document Collection.

† Editor's Note: After World War II, about 27,000 men of the German Navy were ordered to carry out mine-sweeping duties. See Ernst Thienemann "Der deutsche Minenraumdienst," Marine Rundschau ("The German Mine-Sweeping Service," Navy Review), 58th Year, Vol. I, Feb. 1961, Frankfurt a/main: E. S. Mittler and Sohn, G.m.b.H., 1961.

The administrative section concerned with the latter was situated in the Navy Transport Office. It was also in charge of publishing an excellent monthly magazine, the Marine-Flotten-Rundschau (Navy Fleet Review), which printed the best foreign articles on naval air forces, accompanied by very fine photographs, sketches, and news articles, and which was published in an effort to keep Navy personnel up to date with respect to technological advances in the field of naval aviation and warfare. An Air Defense Consultant was assigned to each of the Navy Station Headquarters, one in Kiel and the other in Wilhelmshaven, and each Consultant had an archive of photographic material at his disposal. It was their duty to present lectures designed to keep station personnel aware of the potential commitment and effectiveness of naval air units and to insure that this operational aspect was not neglected during war games and maneuvers.

The Secret Build-Up

In 1924 the Navy Command provided funds for the establishment of a civilian company, the Severa, Ltd., which was to take charge of antiaircraft artillery training. The company took over the naval air stations on Norderney Island and at Kiel-Holtenau. Ostensibly Severa, Ltd. was a Berlin firm which carried out commercial flights and towed targets for anti-aircraft artillery practice, but in reality it utilized its aircraft more and more to provide short observer courses for Navy personnel. There were refresher courses for former Navy pilots and also courses for younger naval officers without flying experience. In addition, the aircraft were employed in aerial reconnaissance missions in combination with fleet operations. Aircraft used by the German Navy were He-S-1's, which were purchased through Sweden and which were of the same type as those used by the Swedish Navy. These were augmented by Junkers seaplanes, the F-13's and W-34's. The instructors were former German Navy pilots, and the scheduling of activity was the responsibility of the Air Defense Consultants at the Station Headquarters.

Beginning in 1924, this activity was supplemented by the training of young Navy officers in a small private seaplane school in Warnemuende.^{56*} This continued until the German

* With a branch school at Stettin-Alt Damm.

Commercial Flying School opened naval flying schools in Warnemuende -- training for observers began here on 1 October 1928 with the K Group (under Lt. Fritz Koehler (Ret.) -- and at List on the island of Sylt.* Courses lasted two years, and each class had 27 students. Both the instructor and the student personnel at these schools were a kind of reserve force for the Navy, and many of the graduates went on to the Severa, Ltd. Under the so-called Sea Eagle Branch (Abteilung Seeadler), both schools conducted special courses for naval pilots and observers.

Under the cover provided by the Commercial Flying School, the seaplane school in Warnemuende soon became an observer training center for the Navy, in which everything but bombardment and torpedo firing was taught.

Utilizing the Severa aircraft, the Navy Command set up a program of practice flights and beginning and advanced training courses designed to further the tactical training of Navy pilots and observers. The officers in charge of this training were given an opportunity to become acquainted with the status of aviation in other countries.

In order to take care of technical matters, a Development Section (Entwicklungsreferat) was set up in the Naval Transport Office and placed under the command of a naval pilot officer, with five civil engineers assigned to assist him. This section was responsible for awarding developmental contracts to industry on the basis of the tactical requirements established. Contracts concerning airframes and engines as well as specialized items (for example, Hydroalium)† were issued through the Reichs Traffic Ministry, which also provided the necessary funds.

In the opinion of the In 1 (L), there was too little cooperation between the Navy and Army agencies concerned with

* Editor's Note: Sylt is one of the North Frisian Islands, situated in the North Sea, due west of the German-Danish boundary line.

† Editor's Note: An aluminum alloy manufactured by the I. G. Farbenindustrie Aktiengesellschaft (I.G. Farben Industry, Inc.)

aviation matters.⁵⁷ The In 1 (L) felt that the Navy agencies were far too concerned with remaining independent, to the detriment of the cause as a whole.

Finished equipment was tested by the Testing Station of the Reichs Association of German Aviation Industries (Erprobungsstelle des Reichsverbandes der deutschen Luftfahrtindustrie), a cover name of course, directed by a former Navy officer. The work of the Testing Station, located in Travemuende, was under the Development Section.

The installation and testing of airborne armaments which could not be concealed required a certain amount of ingenuity. In the case of single-seat fighter aircraft, for example, detachable landing gear was developed, one set for landing on water and one for landing on the ground. In the case of multi-purpose aircraft, the test model was built as a land aircraft so that it could be tested in Lipetsk.

The developmental work on an aerial torpedo had completely bogged down. According to General der Flieger Hans Siburg (Ret.), this was due to "the difficulties in camouflaging experimental launching from aircraft prior to 1933."^{58*}

During the period 1930 to 1933, a number of seaplane models were developed which were subsequently included in the initial issue of equipment to the Luftwaffe and which were then employed

* In his study, "Beschaffung in der deutschen Luftwaffe" (Procurement in the German Luftwaffe), Generalingenieur Walter Hertel indicates that the development and production of a workable aerial torpedo, which was, of course, something entirely new, was carried out by the Navy itself. According to Hertel, "because of the traditional organization of technical services in the Navy and its general procedures and facilities (in accordance with which the construction and designs were completed), this was a mission which in conformity with the experience of the Luftwaffe Technical Office (Technisches Amt), could have been carried out more effectively and rapidly by industry, and that, if the torpedo had been available when needed, the build-up of the Luftwaffe could have proceeded more rapidly." See p.207, where mention is made of the fact that the Luftwaffe had no aerial torpedoes at its disposal. Karlsruhe Document Collection.

very successfully in Spain. These were the single-seat fighter He-51, the naval reconnaissance aircraft He-60, and the multi-purpose aircraft He-59. He Do-H had also been developed as a result of the cooperation between the Navy Command and the Reichs Ministry of Traffic.

In 1933 the development of one of the telescopic catapults (the contracts for which was awarded to the Heinkel Works) was also brought to a successful conclusion.

Air Agencies in the Reichs Defense Ministry 1932 and 1933

In an effort to achieve a unified Luftwaffe on the one hand and to eliminate the intolerable dissipation of agencies entrusted with aviation matters within the Reichs Defense Ministry on the other hand,* the In 1 (L), acting upon a request from the Troop Office,⁵⁹ suggested the following top-level command structure:

1. One air group in the Troop Office (thus in the Army General Staff).
2. An air force branch (Abteilung fuer Fliegertruppen) in the Defense Office.
3. An inspectorate of air forces (Inspizient der Fliegertruppen) in the Defense Office.
4. A Wehrmacht air branch (Wehrmachtsluftabteilung) in the Wehrmacht Armament Office (Wehrmacht-Ruestungsamt), to deal with both Army and Navy air units.

* The Army agencies included in In 1 (L), under the Training Inspectorate, but still strongly dependent upon the Troop Office in its work, the In 2 in the Defense Office (Wehramt) which was chiefly concerned with antiaircraft machine guns, the In 4 in the Defense Office, which was concerned with antiaircraft artillery and searchlight units of the Army, the In 7 of the Defense Office, which concentrated upon communications, and the technical agencies in the Army Ordnance Office. The Navy Command had already organized a single group (LS) to deal with all matters pertaining to air defense.

5. One air section (Fliegerreferat) in the T-1 Branch and one in the Wehrmacht Supply Office (Wehrmacht-Nachschubamt).

There is no doubt that aviation matters, as of 1932, were scattered among far too many agencies. It was not until 30 January 1933, when a Reichs Commission for Aviation (Reichskommissariat fuer die Luftfahrt) was established under Hermann Goering, that the job of reorganization really began. General Siburg describes this situation:

Both the Army and the Navy were well aware of the fact that Goering would not be content to restrict himself to civilian aviation. Neither branch of service, and this applied especially to the Navy, felt that it could afford to get along without an air force of its own. In order to be able to confront Goering's desire for power with a united front, the Army, whose most important aviation men were in the In 1 (L) and the majority of whom were in favor of establishing the Luftwaffe as an independent branch of the Wehrmacht, considered it advisable to concentrate at least the development of all air equipment in the Army Ordnance Office, thus complying with a long-cherished wish of that office. The Navy agreed to the proposal in an attempt to salvage whatever it could.* Thus, shortly after the National Socialists had come to power, the Development Section, including the testing section at Travemuende, was transferred from the Navy Command (BS) to the Wa Pruf 8 Branch of the Army Ordnance Office.⁶⁰

The handling of aviation matters was even more tightly organized when an Air Defense Office (Luftschutzamt) was established 1 April 1933. The office comprised the following bodies: (1) Army agencies, the In 1 (L), Wa Pruf 8 formerly in the Ordnance Office, the Wa NL, formerly in the Ordnance Office, and the air defense sections of the Defense Office, including Asta-3, and (2) Navy agencies under the LS Branch.^{61/}

* This indirectly substantiates Felmy's opinion. See p. 43-44, footnote 57, p. 44.
/ See Chart No. 5.

Colonel Eberhardt Bohnstedt was appointed Chief of the Air Defense Office, with Navy Commander Rudolf Wenninger as his chief of staff. The organization of the Air Defense Office provided for:

1. The Chief of the Air Defense Office was to be immediately subordinate to the Reichs Defense Minister.
2. The Air Defense Office was to represent both the Army and Navy Commands in dealing with all questions within its area of responsibility.
3. The authority of an Inspector of a service branch (~~Waffeninspekteur~~) was to be given to the Chief of the Air Defense Office to be used with all air units, air defense units, and air weather services attached to them.
4. The selection of the Chief of the Air Defense Office and his chief of staff were to be made, whenever possible, from different Wehrmacht branches.

The Air Defense Office's areas of responsibility included developments in aeronautical technology, organization and preparation for mobilization in accordance with the instructions issued by the Chiefs of the Army and Navy Commands, training activity, development of aircraft and equipment (which entailed also the development contracts to industry), the issuance of instructions pertaining to the development of other equipment and all types of munitions to all appropriate agencies of the Army and Navy,* air weather services, all questions of national defense insofar as these concerned aviation and air defense and were not otherwise assigned to Wehrmacht agencies, in conjunction with the Army and Navy Commands, and budgeting.

The Office was organized to deal with these missions. Branch 1 of the Air Defense Office (LA-I) was the forerunner of the later Luftwaffe General Staff, both from the standpoint of its missions and with respect to the personnel assigned to it. Each of the two subdivisions, LA-I (Army) and LA-I (Navy), was further divided into three groups: tactics (I), organization (II), and training (III).

* All tactical-technical requirements were to be first approved by the Army and Navy Commands.

With this, the organizational development which had been going on since 1919 was brought to a close, but the status quo was destined to last only a short while. The newly established (30 January 1933) Reichs Commission of Aviation and its successor organization, the Reichs Aviation Ministry (Reichsluftfahrt-ministerium), which came into being on 1 May 1933, were to reap the benefits of the long years of painstaking but rewarding work.*

* See Chart No. 6.

CHAPTER 2

THE GROWTH OF THE TOP LEVEL COMMAND APPARATUS

The Position of the German Luftwaffe
within the Wehrmacht

As we have seen in the preceding chapter, the Versailles Treaty forbade the newly formed German Army to maintain any kind of an air force.¹ However, Generaloberst von Seeckt's interest in this new arm, which had first begun to play a noticeable role during World War I, and his recognition of its potentialities were so strong that he found a way to circumvent the treaty and begin an air force by establishing Air Consultant Offices in the Reichswehr.^{2*} Von Seeckt even envisioned a separate air force and had he not been forced to resign in 1926, he would doubtless have emphasized the air arm even more strongly.³ After his departure, however, the idea of an independent Luftwaffe was relegated to the background.

Soon after Reichs President Field Marshal Paul von Hindenburg (Reichs President from 1925 until his death 2 August 1934) had appointed Hitler Reichs Chancellor on 30 January 1933, Hitler arranged the appointment of his ambitious, long-time colleague, Hermann Goering (the strongest personality among his followers), to the post of Reichs Commissioner of Aviation (Reichskommissar fuer die Luftfahrt). The Commission thereupon became independent, as did the Reichs Ministry of Aviation which was established under Goering a few weeks later. The appointment of Goering marks the beginning of the realization of the idea of an independent Luftwaffe, for there could be no doubt whatever that the former commander of the famous Fighter Wing Richthofen and holder of the Pour le Mérite award would not be content with the direction of purely civil aviation.

It is difficult to determine with certainty just how much understanding Hitler had of aviation. The negative judgements of Goering, Milch, and the former Quartermaster General of the Luftwaffe, General der Flieger Hans von Seidel (that "Hitler understood nothing about flying and cared less.") are balanced by the generally positive statements of the Fuehrer's Luftwaffe

* See pp. 5-7.

Adjutant, Colonel Nicolaus von Below, Generalleutnant Theo Osterkamp, Colonel Werner Baumbach, the aircraft designer Ernst Heinkel, and Generalrichter Dr. Alexander Kraell* who was appointed to investigate all key personnel of the Technical Office after Udet's suicide. On the whole, it seems certain that Hitler was not fond of aviation in any form and that he harbored grave reservations regarding its potential effectiveness in warfare.

That Hitler was interested in the development of German airpower and that on occasion he directly intervened in the interest of speeding up the development of the Luftwaffe, can, however, be inferred from the pace set by Goering and from Goering's eagerness to present the Fuehrer with record production figures. Unfortunately, during the period in which the Commander in Chief of the Luftwaffe enjoyed Hitler's full confidence -- this period lasted well into the war -- the conferences between the two men usually took place in private,⁴ so that there are no witnesses to these discussions. However, one instance of direct intervention on Hitler's part is well substantiated. This occurred late in the autumn of 1938 after the Munich Conference, when the Fuehrer, obviously concerned over Great Britain's rearmament announcement, ordered Goering to expand the Luftwaffe to five times its existing strength. Had this order been carried out, the cost would have amounted to sixty billion Reichsmarks.⁵ No doubt Hitler was still encouraged by the overwhelming power demonstrated by the Luftwaffe, then the world's strongest air force, during the peaceful and successful settlement of the Sudetenland crisis.

* According to von Below, Hitler was remarkably well informed. (Oral statement made to the author in Detmold, Germany 27 July 1954). In an interview with Professor Suchenwirth in Wiesbaden, Germany on 24 June 1955 Dr. Kraell declared, "In a lot of things Hitler possessed a certain instinct which the experts lacked. One of Hitler's adjutants once told me the following story. The question had arisen as to whether German fighter aircraft or those manufactured by the enemy were faster. Thereupon all of the known types were test flown. This included enemy aircraft. Hitler demanded to see the test report which indicated that the enemy fighters were not appreciably faster than the German aircraft. Hitler then asked, 'What kind of gas did you use in the enemy models? Fly them with enemy gas!'"

The rapid upswing of activity in the Reich after 30 January 1933, in which record performances were established in all sectors of industry, must be described as an instance of Hitler's direct influence upon policy, just as was the simultaneous rapid development of the Luftwaffe. Then too, the energetic and persevering Commander in Chief of the Luftwaffe was anxious to present his branch of service to the Fuehrer as the strongest and most effective arm of the Wehrmacht. In this effort he was solidly backed by his equally ambitious and industrious staff members.

Thus, besides those instances in which Hitler personally intervened, the general spirit of progress which prevailed in the Reich had to be viewed as an example of his indirect influence upon the growth of the Luftwaffe. Hitler's seizure of power assured the Luftwaffe of its development as an independent branch of service, and all of the objections advanced by the Army and Navy were of no avail. They had no choice but to grudgingly accept the new entity, which, of course, did not assure very cordial relationships between the other branches of service and the Luftwaffe.

The High Command of the Luftwaffe (which emerged into the open in 1935 after the need for secrecy was dropped) was subordinate to the Commander in Chief of the Wehrmacht, just as were the High Commands of the Army and Navy. The top Wehrmacht post was held until 1938 by Reichs Minister of War Field Marshal Werner von Blomberg.* Goering, however, as Reichs Minister of Aviation, was a cabinet member and directly subordinate to the Fuehrer/Reichs Chancellor, a dual subordination which he exploited to the utmost in order to achieve his objective of enlarging the Luftwaffe. This aim required funds in amounts which were hitherto unheard of in the Reich and which the other two Wehrmacht branches would never have dreamed of requesting even if they needed them.⁶ Indeed, Goering's own usurping nature, the plethora of influential offices which were conferred upon him, his position as the man next in line to Hitler, and his awareness that he could approach the Reichs Chancellor whenever he wished, all tended to make his position unique among those of the top Wehrmacht commanders.⁷ His prestige was not even damaged by the fact that during a weak moment in 1933 Reichs President von Hindenburg had been talked into promoting Goering directly from the rank of retired

* See figure 10.

Captain to General der Infanterie. At this juncture of affairs no one publicly objected to the fact that Goering had not climbed to the top in the traditional manner which is so indispensable for the preservation of every officer corps and military hierarchy. Instead, the promotion immensely increased Goering's power. As soon as the camouflage order was lifted he was given the new rank of General der Flieger* and shortly thereafter promoted to Generaloberst.

As long as Field Marshal von Blomberg remained in the War Ministry -- he was clearly Goering's superior by virtue of his supreme rank, and he could not be circumvented -- the special position of the Commander in Chief of the Luftwaffe over the other service chiefs was not so glaringly apparent. However, after Blomberg's dismissal on 4 February 1938 and the elimination of the "old guard" of German Army commanders, it was obvious to all that Goering was even superior to the chief of the newly established High Command of the Wehrmacht, General der Artillerie Wilhelm Keitel.⁸ This superiority was also given tangible form on 4 February 1938 when Goering, instead of an Army man, was promoted to Field Marshal. He was then the only active Field Marshal in the Wehrmacht, and at the outbreak of war the Army had no one of comparable rank. However, the Navy did in the person of its Commander in Chief, Erich Raeder, who was promoted to Grossadmiral on 1 April 1939.

* Editor's Note: This was on the same level as General der Infanterie, General der Artillerie, and so on, all being Lt. Generals.

† Editor's Note: The shameful dismissals of von Blomberg and Chief of the German Army General Staff Werner Freiherr von Fritsch provide an interesting insight into the beginning of the subordination of the professional officer corps to the Fuehrer. See Generaloberst Heinz Guderian, Erinnerungen eines Soldaten (Recollections of a Soldier), Heidelberg: Kurt Vowinckel Verlag, 1951, pp. 40-41. See also Generalleutnant Dietrich von Choltitz, Soldat unter Soldaten (Soldier among Soldiers), Zuerich: Europa Verlag, 1951, pp. 41-43. See also Generalfeldmarschall Albert Kesselring, Soldat bis zum Letzten Tag (Soldier to the Last Day), Bonn: Athenaem Verlag, 1953, pp. 29-30.

†† Despite the fact that Goering's hope of becoming War Minister was not realized.

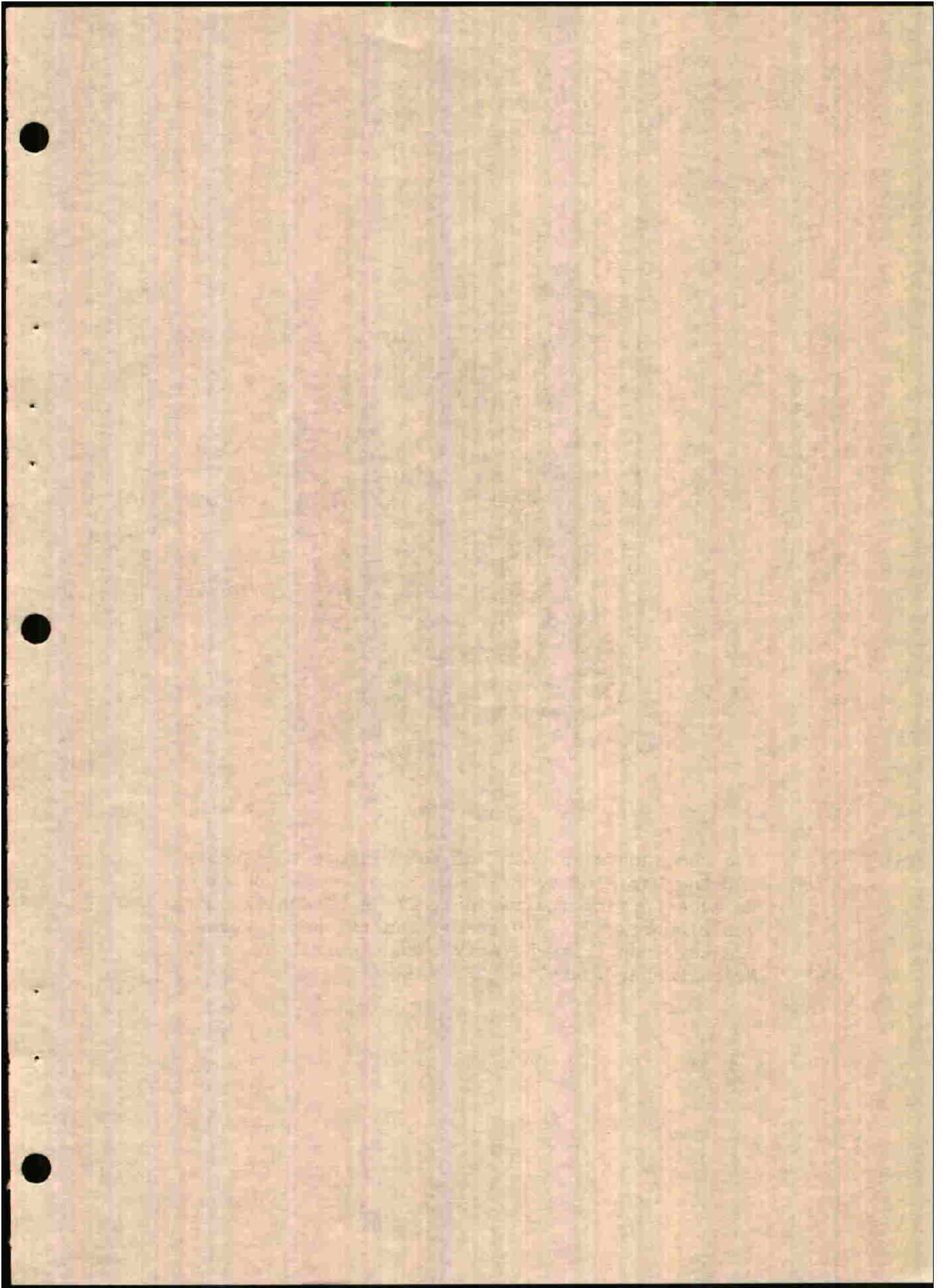




Figure 10.

The Commanders in Chief of the Wehrmacht Branches and the War Minister: L. to R.: Generaloberst Hermann Goering (Luftwaffe), Field Marshal Werner von Blomberg (War Minister), Generaloberst Werner Freiherr von Fritsch (Army), and Admiral Dr. h.c. Erich Raeder (Navy), 1937.

Goering's Personality as a Factor in the Luftwaffe's Build-Up.

Hermann Goering was born 12 January 1893. He served during World War I as an aerial observer (1914) and as a pilot (1915-11 November 1918). A competent fighter pilot, he received the highest Prussian military decoration, the order of Pour le Merite, after shooting down twenty enemy aircraft. When the war came to an end he was a captain and Commander of the famous Fighter Wing Freiherr von Richthofen No. 1. In 1920 he was discharged from the Army, much embittered by the terms of the Treaty of Versailles.

From November 1922 he had been a member of Hitler's National Socialist Party, and in 1923 was made Commander of the Storm Troops (Sturmabteilungen or SA).^{*} In the latter year he was seriously wounded during Hitler's abortive Putsch in Munich. After an extended sojourn in Austria, Italy, and Sweden he returned to Germany in 1927 and joined the Nazi Party which Hitler had revived after being released from Landsberg prison. Goering served as Hitler's political representative in Berlin after 1930 and displayed a good deal of diplomatic skill. With the sweeping Nazi election victory of 31 July 1932 he became President of the German Reichstag (Parliament).

After the downfall of Gregor Strasser[†] in December 1932, Goering advanced to the number two position in the Nazi Party having Hitler's full confidence. On 30 January 1933 he was appointed Reichs Minister without portfolio and Reichs Commissioner of Aviation, on 11 April 1933 he became Prime Minister of Prussia, and on 1 May 1933 Reichs Minister of Aviation. On 30 August of that year, skipping all intervening ranks, he was promoted from Captain to General der Infanterie. Hitler placed him in charge

^{*} See figure 11.

[†] Editor's Note: Early Nazi Party leader who, unlike Hitler, sought to compromise with other political parties. Chancellor von Schleicher therefore saw him as the man to use to help weaken or split the Nazi Party. Hitler, angered by this and by Strasser's attitudes, included him among the large number of opponents who were shot on the night of 30 June 1934.

of the Four Year Plan, 16 October 1936, and gave him the further offices of Reichs Chief of Forestry (Reichsforstmeister) and Reichs Chief Game Warden (Reichsjaegermeister).*

This energetic and ambitious man was intensely aware of his own worth. His determined eagerness to stop at nothing to get ahead and his keen intellect and common sense also helped him in his climb to the top. His nature was that of a usurper, but his undoubted tendencies toward brutality and ruthlessness were more than offset by such winning traits of character as human sympathy, generosity, interest in his staff members, and a sense of humor which enabled him to laugh at himself as well as others. Even his more serious human failings, in particular his vanity, his love of splendor (for the gratification of which he simply took what he wanted with Pasha-like indifference), his boastfulness, and his laziness detracted very little from his prestige or popularity. On the contrary, these characteristics seemed to endow him with more human qualities and made him even more popular with the masses.

Goering's capacity for work suffered from the fact that he tired very easily, possibly from a narcotics addiction which he was able to overcome only temporarily. Then too, he needed a great deal of time for his highly diversified life. In any case, he never had the talent or inclination for steady, routine-type work. Moreover, the multiplicity of top-level posts which were assigned to him required him to issue orders, intervening only when necessary, rather than to do any of the routine work himself. Goering devoted less and less time to the service branch he commanded and which, to a large extent, he originated. His fits of enthusiasm and fruitful intervention were followed by long periods of indifference and lethargy which had a disastrous effect upon the development of the new air force.

On the other hand it must be remembered that, apart from Hitler himself, Goering was the only man on the scene at that time who possessed the necessary energy and will to develop an entirely new service branch out of virtually nothing in defiance of formidable obstacles (including those dictated by statistical limitations). His personality often served as an inspiration to the Luftwaffe and urged it onward to greater achievements. In

* See figure 12.



Figure 11

Hermann Goering as Chief of the Storm Troops (SA), 1923



Figure 12

Goering as Chief Game Warden of Germany (Reichs-jägermeister), 1937.

his thinking on the importance of aerial warfare he was an advocate of the principles formulated by Giulio Douhet, and was therefore eminently logical and often farsighted.⁹

In matters pertaining to the air forces it was extremely advantageous for the new Luftwaffe that its Commander in Chief could by-pass all possible obstacles in the Wehrmacht chain of command by discussing the issues privately with Hitler.¹⁰ Because of Goering's great personal authority and the Fuehrer's backing, the position of Commander in Chief of the Luftwaffe became unassailable and remained so as long as Goering enjoyed Hitler's confidence. Although Hitler usually liked to intervene directly in technical matters concerning the Wehrmacht, he early abandoned this practice with respect to the Luftwaffe since he believed it was going along as it should under Goering's leadership.¹¹

Yet, this practice of man-to-man talks between the first man and the second man in the Reich, to the virtual exclusion of other agencies, was dangerous in that Goering's statements to Hitler could, and very often did, remain both unchallenged and uncorrected. In such circumstances it was naturally imperative that Goering make his reports as factual and as accurate as possible, but did he really do this? Was this the case, for example, in his report on the discontinuation of developmental work on the four-engine bomber?* Was Hitler aware of the fact that this meant the end of the only German aircraft with sufficient range to traverse the Soviet Union? If Goering asked Hitler whether he expected a war with Britain and was then lulled by the Fuehrer's negative answer into hoping that the Luftwaffe

* The first Chief of the Luftwaffe General Staff, General Walter Wever, was persuaded by the Chief of the Luftwaffe Technical Office, Col. Wilhelm Wimmer, to begin development of a four-engine bomber, which Wever dubbed the "Ural Bomber" because of the range expected of it. This project was abandoned in the spring of 1937. See Richard Suchenwirth, Historical Turning Points in the German Air Force War Effort, USAF Historical Studies No. 189, Maxwell AFB, Alabama: USAF Historical Division, RSI, June 1959, pp. 40-44, cited hereafter as Suchenwirth, Historical Turning Points.

could get along with its twin-engine bomber, the Ju-88, then the question was, at best, improperly phrased.^{12*} Perhaps most important of all, did Goering inform Hitler that the German Luftwaffe was unprepared for war or, at least, that it would be incapable of surviving a long-term war against a coalition of enemies? What a salutary and restraining effect a truthful statement of this kind might have had upon Hitler's military policy! Furthermore, we are justified in asking whether it is not true that Goering's reports to Hitler were always a bit too rosy. Was Goering not responsible in great part for creating the intoxication with figures to which the thinking of the Supreme Commander of the Wehrmacht fell prey? The answer in both cases would seem to be "yes" when we consider the statement of Field Marshal Erhard Milch that Goering had once told him he could report two and one-half twin-engine bombers to Hitler for every four-engine one, and that the Fuehrer never asked him what kind of bombers he was building but merely how many.¹³ This, of course, would help to explain some of Hitler's later bitterness toward Goering -- these feelings were especially pronounced during his last days in the Reichs Chancellory -- for

* According to Prof. Dr. Ernst Heinkel, this matter was discussed by Generaloberst Ernst Udet, Chief of the Luftwaffe Special Supply and Procurement Office, who declared, "Nobody thinks there's going to be a war with England. Before he decided to concentrate all of our efforts on the twin-engine dive-bomber, the 'Iron Man' (Udet's name for Goering) had several detailed discussions with the Fuehrer. A war with England is completely out of the question. If anything at all, it will be a war against Poland or Czechoslovakia. The Fuehrer will never let us in for a conflict which goes beyond the boundaries of the European Continent. Therefore for the only possible conflict it suffices to have a medium-heavy bomber with limited range and low bombload capacity, and to make up for it with the highest possible dive-bombing accuracy. This is what we have in the new Ju-88, and we have the resources to build as many of them as the Fuehrer wants, so that we can impress both England and France so thoroughly that they will leave us in peace in any case." Stuermisches Leben (Stormy Life), Stuttgart: Mundus Verlag, 1953, p. 411.

he felt that Goering, his closest confidant and Party comrade, had betrayed him.^{14*}

Germany's Air Command during the Period of Secrecy,
30 January 1933 - 1 March 1935

The Luftwaffe as an independent branch of the Wehrmacht under its own commander in chief was an innovation compared with its status during World War I and during the time of the Reichswehr. The establishment of a Reichs Commission of Aviation was the first step along the new path, while the second and more obvious one was the creation on 1 May 1933 of the Reichs Ministry of Aviation as the successor of the Air Defense Office/ which had been created just one month earlier within the Reichs Defense Ministry.¹⁵

The purely civilian duties of the new ministry (civil aviation, air weather services, etc.) provided the cover for the illicit military aviation activities of the organization.¹⁶ Active officers assigned to the Ministry had been discharged from the service on paper and normally wore civilian clothing. When uniforms were required, the uniform of the German Commercial

* Karl Koller, General der Flieger and last Chief of the Luftwaffe General Staff, noted in his diary the telephone conversation of 27 April 1945 in which Ritter von Greim informed him of his (v. Greim's) appointment as Field Marshal and Commander in Chief of the Luftwaffe: "The Fuehrer sat at my bedside [v. Greim had been wounded while flying to Berlin] for a long time and discussed everything with me. He has taken back his reproaches against the Luftwaffe. He knows very well how much our branch of service has accomplished, and his reproaches are directed solely at Goering." See General der Flieger Karl Koller, Der letzte Monat: Die Tagebuchaufzeichnungen des letzten Generalstabshauptmanns der deutschen Luftwaffe vom 14.4. - 27.5.1945 (The Last Month: The Diary Notations of the Last Chief of the General Staff of the German Luftwaffe from 14 April to 27 May 1945), Mannheim: Norbert Wohlgemuth Verlag, 1949, p. 61. Hitler's former valet, Linge, who was imprisoned in the U.S.S.R. until 1955, presents a similar report of his master's furious reaction upon receipt of Goering's telegram of 23 April 1945 offering to assume leadership of the Reich. According to Linge, Hitler shouted, "I wouldn't have believed that he could betray me this way!" See Revue, No. 49 of 3 December 1955.

/ See pp. 5-7.

Flying School was worn. All of the essential installations were also disguised as civilian enterprises.

Immediately subordinate to the Reichs Minister of Aviation as his permanent deputy was the State Secretary of Aviation (Staatssekretaer der Luftfahrt), Capt. Erhard Milch (Ret.), who was directly in charge of all of the offices of the Ministry.¹⁷ Milch, who later was Director of the German Lufthansa, came to the new Luftwaffe with Goering and remained with it almost to the end as State Secretary of Aviation.¹⁸ A man of indomitable health and energy, stubborn but alert in his work, tremendously ambitious, efficient, without the polish of a diplomat but pleasant and congenial as long as no one tried to usurp his position as deputy to Goering, he was obviously a great help to the officers who were recruited from the Army and were unfamiliar with the Luftwaffe.¹⁹ Milch played a definite and important role in the fate of the young air force.

Goering's Reichs Aviation Ministry was divided into the Central Branch, the Air Command Office (LA), the General Air Office (LB), the Technical Office (LC), the Luftwaffe Administrative Office (LD), and the Luftwaffe Personnel Office (LP).^{20*} The branches and offices were organized in the same way as those in the Reichs Defense Ministry.²¹

The Air Command Office, the most important office in the Air Ministry, was subdivided into the Operations Branch (LA-I), the Organization Branch (LA-II), the Training Branch (LA-III), the Flak Artillery Branch (LA-IV), the Supply Branch (LA-V), and the Signals Branch. A Medical Branch was being organized. The Air Command Office and its branches, groups, and important sections were staffed with General Staff officers. For all practical purposes the Air Command Office was the General Staff of the Luftwaffe.

* The Reichs Aviation Ministry was originally located in the Behrendstrasse in Berlin; it was later housed in a huge building on the corner of the Wilhelmstrasse and Leipzigerstrasse. See Chart No. 6.

† The General Air Office was the civilian office of the Ministry. The Technical Office entailed branches to deal with research, development, and testing.



Figure 13

The able and energetic General-leutnant Walther Wever, first Chief of the Luftwaffe General Staff, 1935.



Figure 14

Generalmajor Erhard Milch, State Secretary
of Aviation. To his Right: Captain
Fritz Morzik and Colonel Friedrich
Christiansen, 1934.

Since the original Inspectorate 1 (I) and the later Air Defense Office had relatively small staffs, and since the Chief of Inspectorate 1 (I), Lt. Col. (GSC) Hellmuth Felmy,* no longer belonged to the central organization, personnel had to be borrowed from the Army, which meant that the incoming officers, although already of higher rank, had to learn to fly. The first to arrive was Col. Hans-Juergen Stumpff, an excellent chief of personnel, who was followed by Col. Walther Wever, soon to become chief of the Air Command Office, and Colonels Albert Kesselring, Karl Kitzinger, and Wilhelm Wimmer.

During his brief association with the Luftwaffe (1933 until his tragic death on 3 June 1936) Wever gained the affection and respect of all who knew him. He stood high in Hitler's esteem, and was the only General Staff Chief who was able to get along well with both Goering and Milch. His colleagues who later achieved high rank in their own right agreed that Wever had the qualities of a genius.²² He guided the activity of the Air Command Office with a firm hand and with supreme self-confidence. No General Staff Chief was thereafter able to achieve such an atmosphere of smooth cooperation, not even Wever's immediate successor, Albert Kesselring, whose greatest contribution in the pre-war period was the organization of the Luftwaffe Administrative Office. The high points in Kesselring's career were to occur during the war as Commander of the Second Air Fleet and Commander of the Wehrmacht (South).

Stumpff, who followed Kesselring as Chief of the Air Command Office, was quite obviously appointed just as a caretaker officer to fill in the position prior to the appointment of Hans Jeschonnek, whom Wever himself had designated as his successor.²³ Jeschonnek was appointed Chief of the Luftwaffe General Staff on 1 February 1939.

* See figure 7.

/ This was the unanimous opinion of a great number of general officers who were questioned on the subject. Among these were Field Marshal Erhard Milch, General der Flieger Paul Deichmann, General der Flieger Hellmuth Felmy, Generalleutnant Josef Kammhuber, and Generalleutnant Hermann Plocher. Wever's contemporary, General Felmy, and Field Marshal Milch compared Wever with Moltke the elder. These are but a few of the countless compliments paid to Wever's character and ability. See figure 13.

From the Official Beginning of the Luftwaffe
to World War II

Three factors were instrumental in the development of the top-level command structure of the Luftwaffe, a force whose existence was first announced to the world on 10 March 1935.²⁴ First and most decisive were the personalities of the two top men. Goering, the Reichs Minister of Aviation and, later, Commander in Chief of the Luftwaffe had long since outgrown the Spartan military life to which he had become accustomed as an Army captain. Moreover, his tendency to see things purely from his own personal viewpoint rendered him incapable of logical military thinking. Milch, the State Secretary, who had also been discharged as a captain shortly after the end of World War I, was also a foreign body from the standpoint of the traditional military hierarchy. It was soon apparent, however, that he possessed certain qualities which Goering lacked completely: industry, perseverance, steadiness, and energy.

The second factor of importance was the newness of the organization, since there was a conspicuous lack of an office chief who was familiar with the air force and thus experienced in knowing its requirements. The third factor was the lack of an adequately large, well-trained, and unified Luftwaffe General Staff. A General Staff for this arm of service could not be openly called into existence until 1 August 1936, and the organization which then emerged was devoid of the century old training and traditions which were typical of the Army General Staff. All of these factors hampered the top-level command of the Luftwaffe, and it remained fraught with problems until just before its final downfall.

After Germany had regained its military sovereignty on 16 March 1935 and, more especially, after General Wever's untimely death in June 1936, the fundamental question soon arose whether the State Secretary, as the permanent deputy of the frequently absent Goering, ought to be granted supervisory authority over all of the ministerial offices. Before long serious friction set in between Kesselring, Wever's successor as Chief of the Luftwaffe General Staff,* and State Secretary Milch.

* Editor's Note: Kesselring held the position from 5 June 1936 to 31 May 1937.

Goering was then in one of his occasional periods of enthusiasm for intervening in all sorts of things, and was throwing his weight solidly behind the Luftwaffe. He actually fostered the rivalry between his two subordinates and finally managed to destroy the somewhat unconventional, but nevertheless workable, harmony prevailing among top-level Luftwaffe leaders. Kesselring finally demanded that he be given full supervisory authority over all of the agencies and offices of the Reichs Ministry of Aviation. This, of course, would have meant depriving the State Secretary of all his power.²⁵

Goering resolved the conflict on 2 June 1937 by issuing orders that the Chief of the General Staff of the Luftwaffe was henceforth directly subordinate to him, which meant that Kesselring was no longer obliged to obtain the previous assent of the State Secretary for decisions, but could simply inform Milch of actions which had been taken by the Commander in Chief. The State Secretary was thus no longer the permanent deputy of the Commander in Chief of the Luftwaffe, but was summoned to represent him only in the event of his prolonged absence or sudden incapacitation.²⁶ However, shortly before Goering's decision Kesselring had asked to be relieved of his assignment and on 31 May 1937 was appointed Commanding General and Commander in Chief of Luftwaffe Service Area 3 (Luftkreis III) with headquarters in Berlin. His successor was Generalleutnant Hans-Juergen Stumpff, Chief of the Luftwaffe Personnel Office.

Goering's decision of 2 June 1937 served to confuse the organization of the Ministry offices with respect to their subordination and chain of command. Quite understandably the decision led to a conflict between the State Secretary (Milch) and the Chief of the General Staff (Stumpff) with respect to the reorganization of the entire top-level command. The State Secretary, whose position was threatened by the General Staff's ambition to take over the "lion's share" of leadership, advocated the establishment of two offices of equal rank with the General Staff, the Air Defense Office (Luftwehramt) as a kind of war ministry, and the Inspector General (Generalinspekteur), with inspection authority over the Chief of the General Staff, the Chief of the Air Defense Office, and the Chief of the Personnel Office, as the eyes and ears of the Commander in Chief. In reality, the position of Inspector General would be one of supreme authority. It is therefore likely that Milch intended to have himself appointed to the post.

The Chief of the General Staff, on the other hand, was anxious to see the State Secretary deprived of his authority in technical and administrative sectors as well as in the field of civil aviation. In a letter dated 6 December 1937, Stumpff described the deplorable conditions brought about by Goering's decision of 2 June: "Instead of one command agency we now have two. An absolute chaos of orders and directives has been the inevitable result."²⁷ Stumpff offered to subordinate himself to the State Secretary in the latter's role as permanent deputy to the Reichs Minister of Aviation and Commander in Chief of the Luftwaffe on the condition that the General Staff be clearly defined as the uniform and comprehensive agency of command in the Reichs Aviation Ministry and in the Office of the Commander in Chief of the Luftwaffe. He further insisted that the General Staff must have the right to issue orders and instructions pertaining to preparations for war during peacetime. This would, of course, be bound to affect the new planned positions, the office of the Chief of Air Defense, with its authority over armament activity,* and the office of Inspector General, the superior agency for all Luftwaffe Inspectorates as well as the Chief of the Personnel Office. With an organization of this kind the State Secretary would have lost much of his authority.† His independence would have ceased and he would have been forced to issue "all orders, instructions, directives, and decisions through the Luftwaffe General Staff."²⁸ In return he would have been secure in his post as permanent deputy of the Reichs Minister of Aviation and Commander in Chief of the Luftwaffe, but he would become less than a cipher if Goering should make this function unnecessary by taking a part in Ministry and Luftwaffe affairs himself.

Goering finally resolved the conflict on 18 January 1938 by making a compromise which substantially reduced the importance of the State Secretary's position.²⁹ The latter was no longer to be the permanent deputy of the Reichs Minister of Aviation and Luftwaffe Commander, but was to fulfill this function only

* Including the Technical Administrative and Personnel Offices. See p. 60 and Chart No. 6.

† Directly subordinate to him were the following Inspectorates: Inspectorate for Flak Artillery and Air Defense (after 1934), Inspectorate for Naval Air Forces, Inspectorate for Training Schools, and the Inspectorate for Air Traffic Control and Equipment.

upon the request of the Commander in Chief of the Luftwaffe. The State Secretary and his staff were to be a part of the Office of the Commander in Chief, Luftwaffe. The General Staff was actually redesignated as the planning staff of the Reichs Minister of Aviation and Commander in Chief of the Luftwaffe, and as the latter's principal advisor in "all questions pertaining to combat readiness, leadership, organization, and training."^{30*} Thus Stumpff, as Chief of the General Staff, like the Chief of the Ministry Office, the Chief of the Central Branch, the Chief of the Air Defense Branch,[†] the Chief of the Technical Office,³¹ the Chief of the Luftwaffe Personnel Office, and the Inspector General of the Luftwaffe,^{††} was personally subordinate to Goering, the Reichs Minister of Aviation and Commander in Chief of the Luftwaffe. Except for the Chief of the Ministry Office, all of the above-mentioned chiefs were responsible for keeping the State Secretary informed of any important questions which might be discussed in their conferences with Goering.

There is no doubt that this system brought the Chief of the Luftwaffe General Staff a good deal closer to his desired position of authority. However, the solution was really no more than a half-measure since the power of the State Secretary, though considerably diminished, was still a factor to be reckoned with, and the fact that this authority had been decreased naturally made him even more eager to arrogate to himself as much responsibility as possible in order to regain his former position of influence. Since Goering could never be persuaded to devote himself to ministerial work for any length of time or with any consistent amount of interest, the Reichs Aviation Ministry was

* The Chief of the General Staff had the right to be present at important conferences held by the Reichs Minister of Aviation and Commander in Chief, Luftwaffe, or, in the latter's absence, by the State Secretary. He was also to be kept continually and fully informed of all basic decisions, especially those pertaining to combat readiness and armament.

† Who was in charge of the General Air Office, the Administrative Office, and the Supply Office, but not the Technical Office because of Udet's position.

†† In charge of all Inspectors. The Inspectorates themselves were, at the same time, subordinate to the General Staff. Truly a decision worthy of Solomon! General Bernhard Kuehl, the later Chief of Training, became Inspector General.

without a leader, a situation which was surely less favorable than the one which prevailed prior to 1937 when Milch had actually borne the function of leadership.*

Thus organizational instability continued in the top-level command of the Luftwaffe. According to Generalleutnant Bruno Maass (Ret.), negotiations in this area were resumed in a direction which "was not especially pleasing to the Chief of the General Staff."³² On 1 February 1939, Generalleutnant Stumpff resigned as Chief of the General Staff and became Chief of the Air Defense Office. His successor was the 40 year old Col. (GSC) Hans Jeschonnek.†

At the same time another reorganization of the top-level command apparatus was undertaken in conformity to orders by the Ministry contained in Ministry Directive A.A.I. No. 50/39, dated 23 January 1939.³³ This materially strengthened the position of Milch, the State Secretary, who was then appointed Inspector General, with the right to inspect all Ministry agencies and all troops in the field. He was confirmed as Goering's deputy in the latter's capacity as Commander in Chief of the Luftwaffe. The Chief of the Air Defense Office, Stumpff, was appointed as Milch's deputy.

In all matters pertaining to leadership and command, including orders to the troops, the new Chief of the General Staff,†† Jeschonnek, remained subordinate to the Commander in Chief, Luftwaffe, with right of direct access to him. After any personal conference with Goering, the General Staff Chief had to inform the State Secretary of all that had transpired, provided that matters of command and leadership had been discussed. In all other areas the General Staff Chief was expected to initially inform the State Secretary of the problem, since he was the representative of the Commander in Chief, and, in case of a disagreement, was permitted to be present at the resulting conference

* The State Secretary's position was also threatened by General Ernst Udet's special status as a direct subordinate of the Commander in Chief, Luftwaffe, with whom Udet had a great deal of influence at this time. This meant that the State Secretary was virtually excluded from the technical field.

† See footnote * p. 26.

†† He was simultaneously designated Chief of the Operations Staff, and thus concerned exclusively with the function of command.

between the State Secretary and the Commander in Chief. The Quartermaster General was granted the right of direct access to Goering.³⁴

The Chief of the Luftwaffe Personnel Office was directly subordinate to the Commander in Chief in matters pertaining to officer appointment and promotions, but to the Chief of the Air Defense Office in matters concerning personnel recruitment. The Supply Office, formerly under the Chief of the Air Defense Office, was assigned to the newly created Office of the Chief of Procurement and Supply (Generalluftzeugmeister or GL).^{35*} The office of Inspector General was redesignated as Office of the Chief of Training (Chef des Ausbildungswesens).³⁶ The fourteen Inspectorates under the new office bore the responsibility for training in all fields.³⁷ The newly created office of President of the Luftwaffe Commission remained in existence only until the following autumn. In addition to the Inspectorate 5 (Air Traffic Control and Equipment), a new office was created, that of Chief of Air Traffic Control (Chef der Flugsicherheit).

This was the organizational structure of the Luftwaffe at the outbreak of war. It was an organization full of compromises and thinly-veiled rivalries. Entirely in keeping with this problematical structure, the leaders in the several top-level groups (including Udet and Milch, who had once been good friends) were extremely cool to each other. In the case of State Secretary Milch and General Staff Chief Jeschonnek the relationship could be described as one of downright hostility.³⁸ Udet seemed to be the only one who managed to remain on a friendly footing with the Commander in Chief, while Goering regarded the overweening ambitions of Milch/ with deepest suspicions.

In any case the situation existing between the various agencies of the Luftwaffe could hardly be described as harmonious,

* This position, newly created for General Udet, covered the entire field of armaments, and consisted of six staff branches, the Technical Office, the Supply Office, the newly established Luftwaffe Economics Office (which concerned itself with export, import, price research and evaluation, and determination of possible areas for economic penetration), and the Department of Flak Artillery Development.

/ See figure 14.

nor could one speak of a respected, firmly-anchored, top-level hierarchy which was capable of giving direction and unity to the Luftwaffe command apparatus.*

Organization and Mission of the Top-Level Command Apparatus

Inspectorate 1 (L) (as an air agency in a war ministry which was forbidden to maintain an air force) had had no significant field agencies to speak of. As soon as the Reichs Commission of Aviation was established (2 February 1933), intermediate command agencies began to spring up between the top-level command apparatus then being established and the Luftwaffe units which were being organized in secret.

On 1 April 1934 (still within the period of secrecy) six senior air offices were established.[†] Five retired generals and one admiral, guaranteeing the continuation of traditional German military ethics, were appointed as chiefs of these offices (Gehobene Luftaemter). In the beginning these offices were disguised as civilian enterprises and were distributed in such a way that they were not geographically associated with the Military Areas, but as soon as there was no further need for concealment they were organized into Air Service Commands (Luftkreise), and on 1 April 1937 a seventh Air Service Command was added. Headquarters of Air Service Command I was in Koenigsberg, that of II in Berlin, III in Dresden, IV in Muenster, V in Munich, VI (Sea) in Kiel, and VII in Braunschweig.³⁹ These were located in the precise centers which had been occupied by the senior air offices.⁴⁰

Each of the Air Service Commands had a commanding general at its head and was directly under the Luftwaffe High Command. They were the highest command authority within their respective

* For later changes in the organization of the top-level command of the Reichs Aviation Ministry in 1937, 1938, and 1939, see folios on Leadership, A/1 and A/1/aa, Karlsruhe Document Collection.

[†] In addition to these senior offices, there were also sixteen intermediate air offices (officially agencies for civil aviation administration) whose chiefs were subordinate to the President of the senior air offices in operations and discipline.

areas and acted simultaneously as territorial command agencies.⁴¹

Subordinate to the Air Service Commands were: (1) the Senior Air Commander (Hoeherer Fliegerkommandeur), who was in charge of all air units in the area,* and, (2) after 1 October 1935, a Senior Flak Artillery Commander (Hoeherer Flakkommandeur), who commanded all of the antiaircraft artillery units, (3) two or three Air Administrative Area Commands (Luftgaukommandos), the so-called "original" ones, (4) a Signal Communications Commander (Nachrichtenfuhrer) with his Air Service Area Signal Communications Battalion, (5) a Procurement and Supply Group (Luftzeuggruppe) with its subordinate supply agencies, supply offices, ammunition depots, fuel dumps, etc., (6) an Air Service Area Medical Battalion, (7) after 1 April 1935, a Personnel Replacement Battalion, and, (8) after 1936, a Personnel Replacement Regiment (Fliegerersatzregiment) and a Pilot Training School class A/B, and (9) all the agencies, troops, schools, which were purely local in character, replacement units, etc., within the Air Service Command area.

The Air Service Area Commander had the authority of military-legal jurisdiction, supervision of all civilian airfields, and the right to issue orders pertaining to civil air defense in the area. The fundamental purpose behind the establishment of Air Service Commands was to organize all of the agencies

* With the exception of those assigned to Air Service Command I, since the air units there were directly subordinate to the Command. In Air Service Command VI, the Senior Air Commander was called the Air Commander (Fuehrer der Luft) and was tactically subordinate to the Commander in Chief of the German Navy. The Senior Flak Artillery Commander was the Flak Artillery Commander, Kiel. After the period of secrecy, except for Air Service Commands I and VI and an Office of the Commander, Army Air Units (Kommandeur der Heeresflieger) and an Office of the Commander, Naval Air Units (Kommandeur der Marineluftstreitkrafte), there was also a 1st Air Division. It existed from 1 April 1934 until 31 March 1935, was stationed at Berlin, and was subordinate to the Reichs Aviation Minister and the Commander in Chief, Luftwaffe. It was comprised of all of the air units in existence at that time except for the Army aerial reconnaissance organizations. This division was disbanded 1 April 1935 when the air units were made subordinate to the Air Service Commands.

created within the new service branch on a regional basis.⁴² The units were still too few in number and too undiversified in type to permit their integration into higher-level troop entities on a wartime basis. General Maass has noted that this system, "because of its strongly territorial basis, was not really suited to the conduct of offensive and highly mobile air operations."⁴³

The Air Service Commands represented a transitional solution, an improvised organizational measure designed to bridge the gap until the Luftwaffe should have achieved a tangible form and should have a sufficient number of commanders and officers at its disposal. The Commands might be described as cupboards into which all of the Luftwaffe installations in their respective areas were stuffed. In many respects they functioned more like a governing board than a command. As Maass points out, "The Air Service Commands were really like miniature ministries in the horizontal organization of a great variety of missions and areas of activity. In the event of war, the command function under the Air Service Area Commander and his chief of staff would have had to have been separated as a kind of 'field command' from the 'home or territorial command' which would be responsible for taking over all of the other functions."⁴⁴

As a matter of fact, Luftwaffe leaders did not have to wait for a war to make them aware of the disadvantages of this system, since even the peaceful annexation of Austria (13 March 1938) brought them strikingly to light. The Commander in Chief of the Luftwaffe soon ordered a major reorganization of the Luftwaffe and on 1 April 1938 Air Service Commands II, III, IV, V, and VII were reorganized into Luftwaffe Group Commands: (1) included Air Service Commands II and III (Berlin), (2) included Air Service Commands IV and VII (Braunschweig), and (3) included Air Service Command V (Munich). Air Service Command I was redesignated Luftwaffe Command East Prussia, with headquarters in Koenigsberg, and the VIth became the 4th Luftwaffe Command Sea, with headquarters in Kiel; Luftwaffe Command Austria was established with headquarters in Vienna. These were mobile command posts, capable of functioning under wartime conditions.⁴⁵

Subordinate to them in all respects were the operational air units, now organized into Air Divisions (Fliegerdivisionen). In conformity to an order issued in March 1939, the 1st and 2nd Air Divisions were assigned to the First Air Fleet, the 3rd and 4th to the Second Air Fleet, and the 5th and 6th to the Third

Air Fleet. In addition to the operational air units, the target reconnaissance units (long-range reconnaissance units) and the office of the Senior Signal Communications Commander were subordinate to the Luftwaffe Group Commands or Luftwaffe Commands. The office of Senior Air Commander had become superfluous and was eliminated on 1 August 1938.

The ten Air Administrative Area Commands -- these had been organized 1 July 1938 on a basis of much larger geographical areas of responsibility than the older ones had had -- were also subordinate to the Luftwaffe Group Commands or Luftwaffe Commands. The IIIrd (Berlin) IVth (Dresden), and VIIIth (Breslau) Air Administrative Areas were assigned to the 1st Luftwaffe Group Command; the VIth (Muenster) and XIth (Hannover, transferred 1 April 1939 to Hamburg), were assigned to the 2nd Luftwaffe Group Command; the VIIth (Munich), the XIIth (Wiesbaden), and XIIIth (Nuremberg) were assigned to the 3rd Luftwaffe Group Command; the XVIIth (Vienna) was assigned to Luftwaffe Command Austria; and Luftwaffe Administrative Area I (Koenigsberg) was assigned to the Luftwaffe Command East Prussia.

This reorganization facilitated the uniform exercise of command from the Luftwaffe High Command down to the troop level. At the same time, it separated "earth-bound" agencies from the mobile air units,⁴⁶ thereby achieving an effective separation from the point of view of command between the conduct of offensive air operations and the home defense operations.⁴⁷

On 1 April 1939 the 1st, 2nd, and 3rd Luftwaffe Group Commands were redesignated as the First, Second, and Third Air Fleet Commands, and Luftwaffe Command Austria then became the Fourth Air Fleet Command. Organization and chain of command within the Air Fleet areas remained substantially the same as it was in 1938. The former Luftwaffe Command (Sea) was abolished after the establishment of the office of Luftwaffe General with the Commander in Chief of the Navy and Commander of Naval Air Units.* The Luftwaffe Command East Prussia was made subordinate to the First Air Fleet Command, and the VIIIth Air Administrative Area transferred to the Fourth Air Fleet Command.⁴⁸

The Air Administrative Area Commands

* General der Luftwaffe beim Oberbefehlshaber der Marine und Befehlshaber der Marinefliegerverbände.

The "original" Air Administrative Area Commands had charge of all the antiaircraft artillery forces located in their respective areas and all of the Airfield Commands (Fliegerhorst-kommandanturen), which were connected only with the establishment and improvement of the ground organization installations. In the event of mobilization, the Airfield Commands were to become subordinate in every respect.

In accordance with the directives and orders issued by their respective Air Service Commands the new Air Administrative Area Commands were in charge of preparing for and conducting air defense operations -- the flak artillery units and fighter groups were assigned to them for this purpose -- and of supplying the operational air units with aircraft, weapons, motor vehicles, equipment, spare parts, ammunition, fuel, etc.⁴⁹ They were called "original" Air Administrative Area Commands to distinguish them from the later Air Administrative Area Commands, which had substantially different powers and responsibilities.

Subordinate to them in all respects were (1) The Airfield Area Commands (Kommandos des Flughafensbereiches) with their subordinate Airfield Commands and Emergency Airfield Commands and Emergency Airfield Commands (E-Hafenkommandos), in other words the permanent commands rather than the group staffs of the operational air units, (2) a Procurement and Supply Group with its entire supply system of offices, ammunition depots, gasoline dumps, etc., (3) all of the signal communications and aircraft reporting units in the area, and (4) the Commander of the Air Administrative Area Medical Battalion (Luftgau-Sanitaetsabteilung) with all of its subordinate offices and services.

In addition, the Air Administrative Area Commanders had local authority over all Luftwaffe agencies, units, schools, replacement units, etc. They were the administrators of air sovereignty at the civilian airfields and had the right to issue orders to the agencies concerned with civil air defense. The commanders also had military-law authority over all institutions and units under their jurisdiction.

Air Commanders (Fliegerfuehrer) and Air Divisions

Effective 1 August 1938 German air units were reorganized into five Air Divisions, and the Senior Air Commander posts were abolished.⁵⁰ This organizational move created the fundamental units of the operational Luftwaffe. There was no uniformity,

however, in the number of units assigned to the several Air Divisions. Each Division had at least one fighter wing and two or three bomber wings, but some also had a dive-bomber wing. Eventually every Division had a long-range (strategic) reconnaissance squadron and a Luftwaffe signal communications battalion. The assignment of units was naturally dependent upon such factors as the number of new units available, billeting facilities for the new wings, and the location, size, and accessibility of the airfields. Each Luftwaffe Group Command had two divisions under its command.

Two more divisions were established to carry out special missions at the direction of the Commander in Chief of the Luftwaffe. These were the Training Division (Lehrdivision) and the 7th Airborne Division. The Training Division,* which had grown out of the 2nd Group, 152nd Bomber Wing, in Greifswald (1936) into the office of Senior Commander, Training Troops (Heeherer Kommandeur der Lehrtruppen), established 1 October 1937, and, on 1 August 1938, into the Luftwaffe Training Division, was assigned the same mission that had been entrusted to its two predecessors, namely the testing of new aircraft models at troop level. Headquarters of the division staff was in Greifswald, and worked very closely with the Luftwaffe testing stations, with manufacturing firms, and with the Technical Office, as well as with the General Staff and certain of the Inspectorates. Units within the division were capable of testing all of the equipment slated for introduction into the Luftwaffe, including flak artillery and searchlight equipment. When the war began, it was relieved of its testing mission and its valuable activity in this field came to an end.

The 7th Airborne Division was established 1 June 1938. The idea of creating a unit of this kind came from General der Flieger Kurt Student† and was brought to fruition by Major Gerhard Bassenge, Commander of the Paratroop School at Stendal,††and by the work of

* On 1 June 1939 the Training Division was comprised of two Training Wings (Lehrgeschwader), with headquarters in Greifswald and Garz, respectively, one Flak Artillery Training Regiment, with headquarters in Stralsund, and one Luftwaffe Signal Communications Training Battalion, with headquarters in Greifswald.

† See p. 11.

†† This School had grown up during the spring of 1937 from an experimental section assigned to the Stendal airfield.

the Luftwaffe General Staff. Student managed to imbue his division with an unusually strong fighting spirit, which afterward became known as the "paratroop spirit." Besides the 1st Paratroop Regiment, with its headquarters in Stendal, the division also had an airborne force (Infantry Regiment No. 16) provided by the Army. In the 1st and 2nd Special Duty Bomber Groups the division possessed the only air transport groups in the entire Luftwaffe.* Despite the highly favorable experience acquired in the beginning of the Spanish Civil War,† this branch of the Luftwaffe had been largely neglected. In January 1939, in addition to his post as Commander of the 7th Airborne Division, Student was appointed Inspector of the Paratroop and Airborne Forces (Inspekteur der Fallschirm- und Luftlandetruppen).

It was not until shortly before the outbreak of the war that a special duty bomber group was set up under Generalmajor Wolfram Freiherr von Richthofen for employment in close support operations with the Army.

The creation of an independent air force required close coordination between it and the other two branches of the service in order to preserve the Wehrmacht's spirit of which Luftwaffe leaders were constantly aware and which they emphasized in writing the Luftwaffe Service Manual 16 (Luftwaffendienstvorschrift). The Luftwaffe had to assign both air and antiaircraft artillery units to the two other Wehrmacht branches. In such cases, provisions were made for the maintenance of a Luftwaffe chain of command for the units placed at the disposal of other arms of service. As far as the Army was concerned, these

* These groups were equipped with tri-motored Ju-52's. It was planned to eventually equip them with four-engine Ju-90's, which would have been capable of carrying heavy weapons, vehicles, and the like for air landing operations. This plan was never realized.

† After the outbreak of the Civil War in Spain (19 July 1936), General Francisco Franco's request for Ju-52's of the German LUFTHANSA was granted. These planes transported over 40,000 Moroccan and Spanish Foreign Legion troops from Tetuan, Spanish Morocco to the Spanish mainland to bolster the Nationalist forces.

provisions consisted of:

(1) The appointment of a Luftwaffe General, Office of the Commander in Chief, Army, known after 1 March 1939 as the Commander of the Army Air Units and Luftwaffe General, Office of the Commander in Chief, Army (Befehlshaber der Heeresflieger-verbaende und General der Luftwaffe beim Oberbefehlshaber des Heeres). He had command of three reconnaissance wings with a total of ten reconnaissance groups, a force which was then still in the process of activation.*

(2) In the event of war, a Luftwaffe Commander (Kommandeur der Luftwaffe or Koluft) was to be assigned to each Army Group and to each Army Command. These positions were to be filled from the staffs of the reconnaissance wings and groups.†

As far as the Navy was concerned, the Luftwaffe Command, Sea, was deactivated 1 March 1939 and the Air Commander was made subordinate to the Luftwaffe General, Office of the Commander in Chief of the Navy and the Commander of the Naval Air Units.⁵¹

* The reconnaissance wings were not organized until 1 August 1939. Prior to that time there was no intermediate assignment of reconnaissance unit commanders.

† Since at the same time the Koluft was Inspector of the Aerial Reconnaissance Forces, and the long range (strategic) reconnaissance units subordinate to the Commander in Chief of the Luftwaffe were also under his command. See p. 72.

CHAPTER 3

THE BUILD-UP OF THE LUFTWAFFE

Repercussions of Political Events upon the
Luftwaffe

There is always a certain amount of interaction between the political policies of the State and its military forces. This was bound to be especially true in Germany after Hitler came to power in 1933, for after 1919 German politicians, almost without exception, considered it their sacred duty to try to free their country from the intolerable fetters of the Treaty of Versailles. The governments in power in the Reich following World War I were keenly aware of Germany's central position in Europe, and had felt the disadvantages of having no strong armed force which could provide backing in foreign policy.

France, with her large and well-equipped forces, had no cause to fear the disarmed Germany to her East, although Germany faced on her own Eastern boundary a covetous Polish neighbor, closely allied with both France and Czechoslovakia. The steps taken in 1928 and 1929 to increase the German Reichswehr to twenty-one divisions were far too ineffective to assist in maintaining Germany's position in foreign policy. The German Army's undoubted high quality was not enough to compensate for its great numerical inferiority.

In keeping with the generally discriminatory attitude toward Germany and its military impotence, it was not surprising that German foreign policy was crowned at best with the most modest successes. In addition, the Reich lacked the requisite internal peace and stability necessary to support successful and purposeful political negotiations. A constant stream of emergencies in one sector or another of Germany's public life dictated her political activity. The advent and rapid growth of the National Socialist German Workers Party (Nationalsozialistische deutscher Arbeiterpartei, N.S.D.A.P. or Nazi) was more than a unique entity. It was an outward sign of the scope and urgency of Germany's internal problems. The Nazi Party leaders, intent upon moving quickly to the fore, disdained to waste their growing strength in the achievement of small local victories, and set their goals upon seizing national power.

Hitler thought in terms of the complete transformation of the German people and their government. His plan, which nearly became a reality, is described in his book Mein Kampf (My Battle).¹ From the beginning he was determined to achieve the following foreign policy goals:

- 1) Elimination of the humiliating restrictions of Versailles and a return to the Reich of territories taken from it in 1919-1920.
- 2) Unification of all of the German peoples into a single nation.
- 3) Acquisition of additional territory in the East.
- 4) Safeguarding of Germany against the threat of Communism.

Even during his struggle to power Hitler was well aware of the importance of a strong military force for his ambitious plans. He was firmly convinced that military power was indispensable for the exercise of government and for the achievement of foreign policy goals. The psychological aspects of his experiences as a soldier in World War I had given him a familiarity with the military and a feeling of identification with the service. Thus, in contrast to the notorious Capt. Ernst Roehm, who envisioned the establishment of a Party Militia (the SA) as the nation's arms bearer, Hitler always looked toward the creation or the rebirth of the Army. Of course, for obvious reasons he was grateful for the help of the Storm Troops in his rise to power, but in his preoccupation with the idea of raising an army he was in agreement with Goering, the enemy of Roehm.*

It is astonishing that the Versailles powers, in defiance of prudent and far-sighted statesmanship, repeatedly allowed themselves to be persuaded by France not to allow any concessions to the Weimar Republic in the area of national security. This

* ~~Editor's Note:~~ Roehm was shot along with Gustav von Kahr, General Kurt von Schleicher and his wife, Gregor Strasser, and others who were considered hostile by Hitler, on the night of 30 June 1934.

was true even during the Bruening government, which was the last pre-totalitarian one before the Nazis came to power. The victorious great powers also refused to grant Reichs Chancellor Franz von Papen the support he needed to maintain his office. Even without assistance he adroitly managed to hold his position for a time against the concentrated attacks of Hitler, but this was a short-lived struggle. It is true that Britain, France, and Italy finally made certain concessions to General Kurt von Schleicher, Hitler's predecessor as Reichs Chancellor, who was so bitterly opposed to the National Socialist programs. But even these, made at the eleventh hour on 11 December 1932, amounted to no more than a theoretical recognition of equality of rights for Germany. The realization of international unilateral disarmament or the permission for Germany to rearm to a level commensurate with that of other nations still lay in the uncertain realm of future negotiations.

In these circumstances it is indeed strange that the German governments, which adhered to a constitution that was presumably acceptable to the great powers, were almost uniformly unable to achieve any significant redress of grievances or alterations of their unfavorable situation through negotiations, while the Nazi government, acting overtly in its own interests, was permitted to proceed in almost every sector of its internal life unhampered by the Allies, and was allowed to carry out its rearmament plans without any substantial objections by the guardians of the Versailles Treaty.*

* Editor's Note: The German Foreign Office pursued a policy of fulfillment with respect to the Versailles Treaty from 1923 to 1929, while it consistently, but vainly, sought to secure amelioration of the discriminatory clauses affecting Germany. Acting on France's lead, the Allies (except the United States and the Soviet Union) stoutly defended the status quo of Versailles until the advent of Hitler in 1933. Hitler withdrew Germany from the League of Nations, breached the French alliance system by the German-Polish Treaty (26 January 1934), drove a deeper wedge into this system by the Anglo-German Naval Agreement (18 June 1935), restored universal military service (16 March 1935), reoccupied the Rhineland (7 March 1936), established the Rome-Berlin Axis (27 October 1936) to which Japan was joined (17 November), officially annexed Austria (10 April 1938) and the Sudetenland through the Munich Agreement (29 September 1938). The Allied protests, mostly from France and Czechoslovakia, were

Hitler, who became Reichs Chancellor on 30 January 1933, was obviously determined from the beginning to build a strong air force as a separate branch of the Wehrmacht. For reasons of security he needed a strong air arm as soon as possible in order to inspire respect for Germany abroad. In Goering he found an understanding and enthusiastic helper for the accomplishment of this objective. The assignment appealed to Goering's desire for power, and was otherwise appropriate from the point of view of his previous military experience. Goering, a strong advocate of the idea of a separate, independent Luftwaffe,* was familiar with the ideas on aerial warfare advanced by the Italian, Giulio Douhet, and by the Frenchman, Camille Rougeron, and permitted these concepts to intoxicate his imagination. From the outset he knew exactly what he wanted and required no prompting. Furthermore, he was determined to create the largest and best air force in the world, to enjoy the satisfaction of being its creator and commander, and to place it at the Fuehrer's disposal as

often half-hearted and uniformly ineffective. No positive steps to check Hitler's plans were taken until Germany had absorbed the rump Czech State (10-16 March 1939). It is one of the ironies of history that Hitler, using the weapons of audacious threats and bluffs, was able to achieve in five years revisions of the Versailles Treaty, while the Weimar Republic (which supposedly had the blessings of the Allies) found itself constantly rebuffed and badgered when it attempted to soften the Treaty terms through negotiations. It has even been suggested that the adamant attitude of France and her closest collaborators provided additional grist for National Socialism, and helped to cut the feet from under the democratic forces in Germany. See Otto Gessler, Reichswehrpolitik in der Weimarer Zeit (National Army Policy in the Weimar Period), Stuttgart: Deutsche Verlags-Anstalt, 1958. See also Gordon A. Craig and Felix Gilbert (eds), The Diplomats, 1919-1939, Princeton: Princeton University Press, 1953; Harvey L. Dyck, Weimar Germany & Soviet Russia 1926-1933, A Study in Diplomatic Instability, New York: Columbia University Press, 1966; M. Margaret Ball, Post-War German-Austrian Relations: The Anschluss Movement, 1918-1936, Stanford: Stanford University Press, 1937.

* According to statements by Ministerial Director (Ret.) Wilhelm Fisch there was friction between Goering and Ministerial Director (in the Reichswehr Ministry) Capt. Ernst Brandenburg even prior to 1933 because the latter opposed an independent Reichs Aviation Ministry. See also p. 14.

a valuable instrument of foreign policy.

The Luftwaffe had early acquired a political aspect, even before the political background against which it was to function had been clearly defined. Much of this was due to Goering's special relationship with the head of state which allowed him to bring his requests in behalf of the Luftwaffe to the personal attention of Hitler and immediately gain assurance of their approval. Money was therefore no real obstacle for Goering, nor was his Luftwaffe to be found wanting in the allocation of raw materials.

Until the proclamation of German air sovereignty on 16 March 1933, the goal had been to build up the air force as strongly and quickly as possible, under the veil of secrecy, in order to provide an adequate military background for Hitler's political ventures. At that time, of course, there was a limit to what could be accomplished by even the most skillful and devoted work. An organizational framework had been established, but there was very little within the framework which would have been useful in case of war. Nevertheless, quite apart from the standpoint of quality, the 4,029 aircraft produced by the first Luftwaffe Aircraft Procurement Program (the so-called "Rhineland Program"), which was launched on 1 January 1934, were intended to impress because of their number. Besides their primary use in the training program the planes were to serve as a deterrent in case any of Germany's well-armed neighbors wished to interfere. In this respect, the beginning of the Rhineland Program may be considered the birthdate of the so-called "risk Luftwaffe" (Risikoluftwaffe), a name which was selected in order to allay trouble from any quarter, since the secret build-up could not be hidden from the world indefinitely. As its name indicated, the existence of the "risk Luftwaffe" in Germany was designed to convince other countries that any adventures against it would entail a risk.

In keeping with the purpose of the "risk" force, the number of bombers considerably exceeded the number of fighters (in 1935 by 822 to 251). Plans for the development of a four-engine bomber were also born of the "risk Luftwaffe" idea.* To be sure, the

* See p. 50.

direct political connection here is no longer clear.* The name "Ural bomber," which was applied to the four-engine aircraft in the Reichs Aviation Ministry, does seem to point to Soviet Russia as the potential enemy.

The general political unrest which ensued with Hitler's appointment as Reichs Chancellor, his obvious determination to modify the terms of the Versailles Treaty in spite of Allied objections, the revolutionary tempo in foreign policy developments, and the constant pressure of time all combined to create a certain degree of instability in the build-up of the Luftwaffe. Increases in the scope of the Luftwaffe armament program -- this was usually approved in the spring under the pressure of growing foreign policy tensions -- were often cancelled again in the autumn when it became apparent that tensions were relaxing. Likewise, political events such as the occupation of the Rhineland by German troops, the annexation of Austria, and the acquisition of the Sudetenland were sources of great anxiety and uncertainty both at home and abroad.

The year 1942 had been set for the completion of Luftwaffe armament activity, and no leader of the Luftwaffe really believed in the possibility of war, certainly not a large-scale war, before that date. In 1937 developmental work was discontinued on the four-engine bomber, an aircraft which was so indispensable in a large-scale war.† It was common knowledge that Hitler was

* Unless the inclusion of Russia in the Deployment and Battle Orders (Aufmarsch-und-Kampfanweisungen) for 1936, which were drawn up at Goering's order, may be regarded as a clue. This was the opinion of General der Flieger (Ret.) Paul Deichmann.

† Editor's Note: Field Marshal Erhard Milch believed, as did General Paul Deichmann, that the Ju-19 and Do-19 models were adequate for further development. Milch claimed that General Albert Kesselring was responsible for getting Goering to stop development on the ground that raw materials were in too short a supply. Kesselring, however, states that the problem in development was that too many aircraft were being hastened into series production without being properly tested. He admits that he thought in terms of a possible European war, but not a world-wide conflict. See the statements of Field Marshals Milch and Kesselring, C/IV/4, Karlsruhe Document Collection.

eager to avoid a conflict with Great Britain and that he was trying to bring about an alliance between the two countries. Many German military leaders allowed their fears to be placated by this knowledge. Thus it came as a surprise on 18 February 1938 when Luftwaffe leaders were ordered for the first time to concern themselves with command problems which might be involved in a possible air war against England. On 16 May 1939 the Chief of the General Staff, Second Air Fleet, detailed a special staff under Generalleutnant Hans Geissler to study "the questions pertaining to air defense and to the execution of air attacks over the ocean as well as along the coast."² But even at this time no one really believed in a war against England, not even Goering who had allowed himself to be persuaded of this by Hitler during the spring.³ It is now clear that Hitler had no intention of starting a general war, especially one against Britain, but Goering failed to consider the possibility that circumstances might cause Britain to declare war upon Germany, just as it had in 1914. This possibility should have been included in the basic planning of the top-level staffs of the Luftwaffe.

Goering's oversight was to make itself painfully felt in the case of the naval air units. These pilots somehow never attracted much attention to themselves.* They gained immeasurably in experience as they carried out their training missions, but somehow their activity never seemed to be spectacular enough to convince the Commander in Chief of the Luftwaffe that a strong sea air arm ought to be developed which could coordinate its operations closely with those of the Navy. Despite their reserve toward the Navy, both Hitler and Goering were well aware that in the event of war with England a strong Navy and a strong

* Editor's Note: The German Navy adhered to the principles of the old Imperial Navy to which it looked for its model. Not only were its activities more removed from the sight of most observers, but it also was less involved with the Party and political developments.

air force capable of employment against sea targets would be needed.* But, largely because of Hitler's vacillation with respect to the question of England, / when the war began in 1939 the available naval air units were far too few in number for combat operations and were technologically grossly inferior. Further, the units trained for and slated for employment in naval air operations by the Commander in Chief of the Luftwaffe were by no means closely coordinated with the naval forces. In this connection one must not overlook the efforts made by Goering to work closely with the High Command of the Navy and the Navy Group Commands, to utilize former naval officers in the command of Luftwaffe units at all echelons, including the field of aerial mine development, and to promote a program for the development and introduction of aerial torpedoes.// However, one must admit that it was primarily Hitler's attitude and his desire to

*Editor's Note: Here the author overlooks Goering's covetous attitudes with respect to airpower. It was the Commander in Chief of the Luftwaffe who replied when pressed for the development of a naval air arm, "Everything that flies belongs to me." Admiral Friedrich Ruge comments, "The Commander in Chief of the Luftwaffe was a stranger to the sea. He also made no sort of effort to know or to understand it. It is therefore no wonder that the Luftwaffe went its own way to the detriment of the total war leadership. The many instances of good cooperation at the middle and lower levels could not compensate for this, even less so since the Luftwaffe, in the short period of its existence, had developed no clear idea of sea warfare or of sea power as a opponent." Der Seekrieg 1939-1945 (The Sea War 1939-1945), Stuttgart: Kurt Vowinkel Verlag, 1954, p. 38.

/ Editor's Note: It is customary for Germans to use the word "England" when discussing Great Britain. In this case Great Britain is clearly meant.

// Editor's Note: The torpedo arm in the Luftwaffe was virtually unknown at the outbreak of war in 1939, although planning had begun as early as 1933. According to Generalingenieur (Ret.) Ernst A. Marquard, the "Aerial torpedo was not operational until 1941," and a worsening of the situation at sea obliged the Luftwaffe to improve its torpedoes. See Letter by General Marquard dated 27 May 1955, C/VI/3, Karlsruhe Document Collection. In 1943 the Luftwaffe took over the making of torpedoes, but it continued to have problems with them until the war's end.

avoid a war with England which were responsible for the inadequate development of naval air units, including aircraft carriers.* Hitler's evaluation of British policy was perhaps understandable, but it was objectively wrong and was responsible for guiding the organizational and technical development of the Luftwaffe in the wrong direction. Of course, it must be borne in mind that it was principally the lack of a long-range, four-engine bomber force that stood in the way of effective air operations against targets outside of continental Europe.

Even as late as the spring of 1939, when the political skies of Europe clearly reflected the storms to come, German military leaders still did not consider it necessary to work out a mobilization plan for the air armament industry, so that Germany's available capacity could be fully exploited and workers and machinery could be utilized which were bound to be released from other branches of industry in the event of a war.

Hitler, and he alone, was responsible for Germany's political policies, and he had a habit of arriving at these positions intuitively according to the given situation.⁴⁷ His policies became bolder with each victory he achieved, but they were established without taking into account the potentialities and limitations of the individual branches of the Wehrmacht, which could not possibly be expected to adjust their plans as rapidly as the capricious ventures of the chief of state were made, ventures which often came dangerously close to war. Hitler announced in his Four-Year Plan of 16 October 1936 his intention to make Germany economically invulnerable to the effects of war. This plan was just getting under way when, in 1937, the Reichs Minister of Aviation was forced to accept far-reaching curtailments in the allocation of aluminum and steel, which, in turn resulted in a decrease in aircraft production.

* Editor's Note: Germany did not have a single aircraft carrier in operation during World War II. The only carrier, the Graf Zeppelin, was never completed and commissioned. Special Messerschmitt Bf 109-T's were designed for it, but, since the ship was never finished, these were converted to Me-109-E's.

⁴⁷ State Secretary (Ret) Ernst von Weizsaecker, in his Erinnerungen (Memoirs or Recollections), Erlangen-Leipzig: 1950, p. 132, mentions Hitler's marked "tendency towards improvisation."

The fact that military leaders counted upon a long-range program which was scheduled to run until 1942, and had thus authorized very large amounts of steel for the construction projects of the Luftwaffe and for the expansion of aircraft industry facilities, now made itself painfully felt.⁵ The Luftwaffe could well have subsisted with material-saving provisional construction and have put much more into the development of air armament production facilities if Luftwaffe leaders had recognized much earlier Hitler's willingness to let things come to a head. Not even Goering was aware of this, and it is very likely that Hitler himself was simply allowing the dictates of the moment and the victories already achieved to guide his intuitive decisions along a path which he irrationally hoped would make it possible for him to achieve his objectives without war or with no more than a limited blitzkrieg. His decisions were surely influenced very little by the cool deliberations of logic and reason. But, since organizational measures, especially the organization of a large-scale armament effort, require a certain length of time in which to become effective, capricious decisions and the demands resulting from them were bound to create confusion.*

One example of this was the Fuehrer's demand late in the autumn of 1938 that the Luftwaffe be enlarged fivefold when Britain began to rearm after the Munich Conference. Hitler's order, announced by Goering to his office chiefs on 5 December of that year, presupposed such astronomically high expenditures and such generous allocations of raw materials that it was patently impossible to carry out the order. Despite the objections of the Chief of the Organization Staff, Luftwaffe leaders accepted this order with the intention of complying with it to the full. Yet, during the remaining eight months before the outbreak

* From 1 April 1938 to 31 March 1939 a total of 14,600 tons per month (15,600 tons for seven months of the period) of steel was allocated to the Luftwaffe, as compared with 29,700 tons for construction activity, industrial expansion, machine tools, maintenance and repair costs, and civilian aviation, for which 2,500 tons per month were allotted. See OKL, "Zusammenstellung der Eisen-und Stahlkontingente der Luftwaffe einschliesslich Zivile Luftfahrt" (High Command of the Luftwaffe, "Compilation of the Iron and Steel Contingent of the Luftwaffe including Civil Aviation." A Summary.), C/II/1a, Karlsruhe Document Collection.

of war the expansion of the Luftwaffe proceeded barely faster than had been planned prior to Hitler's order. It is not known whether Hitler was ever informed of the impossibility of accomplishing his decree.

Luftwaffe leaders had dropped the four-engine bomber in 1937 in keeping with their conviction that the Reich might become involved, at worst, in a war with her weak eastern neighbors, probably only one, and with complete confidence in Hitler's ability to avoid a large-scale war.* In 1938 the Luftwaffe introduced the Ju-88, a fast, twin-engine bomber with good dive-bombing ability. After all, a large-scale war could be more easily avoided if a small country agitating for war could be quickly and completely subdued. Luftwaffe leaders accepted this thinking and concentrated all of their efforts upon preparing for a blitzkrieg. They even opted to commit the reserve squadrons at the beginning of the war on the assumption that the Luftwaffe could get along without reserves. In other words, Jeschonnek's horizontal order of battle was to be given preference over the traditional vertical order.⁶

But, political developments and the military requirements which they created had long since begun to deviate from the anticipated path and were moving forward at far too fast a pace for organizational expansion and armament production to keep up with them. The tragic result from the Luftwaffe's point of view was that the German air arm entered the World War of 1939-1945 (which very literally became a war of survival for Germany) unprepared for a long-term struggle.

The Build-Up of Air Units

The Wehrmacht and, in particular, the leaders of the Luftwaffe, were faced in 1933 with the unique task of creating an air force of world significance from almost nothing. (As far

* In view of the discontinuation of work on the four-engine bomber, it seems rather inexplicable that the Luftwaffe General Staff later requested another long-range bomber, probably shortly after Lt. Col. Paul Deichmann left Branch I (Operations) of the General Staff. See p. 79 of this study. The explanation may be that Hitler suddenly faced up to the fact that his long-cherished plans for a British-German alliance were doomed.

as antiaircraft artillery forces were concerned the starting point was more like that of the Army, development being largely a matter of expansion.)

Before the activation of combat units could be undertaken, Luftwaffe leaders had to answer two basic questions: (1) What was the most effective way to deceive the world in general, and Germany's hostile neighbors in particular, concerning the build-up of a German air force? and (2) How many and what kind of units were needed to meet the crises which were obviously in the offing?

Clearly the goal could not be achieved solely by a well-organized training program which relied upon the aid of a foreign power (the Soviet Union) and the generous assistance of the commercial airline Lufthansa. Yet, these two factors provided the first opportunity for concrete action in terms of a military air arm, and every effort had to be made to exploit fully the advantages offered from abroad, from Lufthansa, and from the field of technology. Organizationally, new methods had to be selected. German air leaders, their eyes firmly fixed upon the goal of creating a powerful air force, had to avoid at all costs letting the world know what was transpiring. This meant that the entire build-up job had to be entrusted to organizations which were already in existence and which could be expanded to insure meeting the needs of the future but without attracting public attention. It was therefore quite natural that in the Reichs Aviation Ministry the General Staff devoted itself primarily to the theoretical task of planning for the future, while the practical work was being done in the field. Even then the Luftwaffe build-up consisted generally of expansion and improvement of training facilities and an increase in the number of these sites. Prerequisites for the smooth accomplishment of this task were:

(1) to see that all personnel with flying training and experience were registered and assigned to the Reichs Aviation Ministry or to the agencies associated with it.

(2) to see that the Army and the Navy gave active support to the location of suitable officer personnel for the Reichs Aviation Ministry, for the Luftwaffe command agencies, and for subsequent assignment to the Luftwaffe itself, and to insure that those volunteering for Luftwaffe duty were released to the Ministry.

(3) to carry out large-scale planning of training programs in all fields of aviation and air defense. This includes enlarging

and increasing the number of training installations, especially airfields and artillery ranges in remote areas with little traffic, where outsiders would have little chance of knowing what was going on. German Sport Fliers, Ltd., was included in the Luftwaffe build-up by encouraging it to provide technical and flight training for young people interested in volunteering for future assignments in the Luftwaffe.

These training measures were assured by accelerating the production of aircraft, flak artillery pieces, and other equipment, by increasing the number and capacity of air armament centers, and by assuring the availability of engineer and skilled personnel in training centers maintained by industrial firms and improving the training offered there. These steps were effective in guaranteeing the availability of a nucleus of skilled workers for later requirements. This force grew from about 4,000 men in January of 1933 to 20,000 by February of the following year, and to almost 72,000 by June 1935.

(4) to intensify research activity through the enlargement of existing research centers and the establishment of new ones.

(5) to plan and develop an administrative agency to supervise all supply and procurement activities.

(6) to develop a chain of command to meet the requirements of the moment and, at the same time, take into account the existing organization which had been established on the basis of territorial commands.

The more smoothly and broadly these six organizational and training measures could be executed, the more favorable would be the conditions created for the activation of a field air force. In the final analysis it was easy to set up a desired program and to devote all of one's efforts to its realization, but it was unreasonable to expect that the goal would be achieved in the first round of activity. Members of the Reichs Aviation Ministry were all too familiar with the inadequacies inherent in both planning and realization, yet the Ministry had the courage to persevere in spite of this and to "commandeer" the efforts of all those persons connected with the field of aviation in an attempt to achieve the desired result. The number of units to be activated depended exclusively upon the production of the aircraft factories and the release of trained crews from the schools.

The Luftwaffe in 1935 organized the Air Group Doeberitz, the Fighter Wing "Richthofen" (equipped with Ar-65's and He-51's,* the Air Group (S) at Schleissheim (equipped with Ar-64's and 65's and He-51's), and the Fighter Squadron Kiel (equipped with He-51's).† The results of this organization were satisfactory. Even during the period of secrecy it was possible to activate tactical units (albeit initially in name only) as training units. Despite many imperfections, these units early developed their personnel in a soldierly and comradely spirit which made possible the theoretical and practical exercises in tactics. Encouraged by the inactivity and outmoded thinking of their former enemies, German air leaders took the further step of actually setting up independent air units. These were few in number, of course, and restricted to localities where there was little danger of discovery. Consequently, it was possible, at least on paper, to speak of the existence of a risk air force as early as 1934 and 1935.†† Previously, as mentioned earlier, bomber units were given priority since German air leaders considered offensive action against enemy bases as the best defense. By the same token, they felt justified in neglecting home air defenses inasmuch as the nations surrounding Germany either had no offensive air forces whatever, or at best, very weak ones.

Measures Implemented by the Luftwaffe Command **

By January of 1933 all of the agencies concerned with aviation had formed a loose association or organization, but one which was incapable of rapid, well organized, or effective work.

* See figure 15.

† Prior to Germany's announcement of military sovereignty in 1935, all air units were assigned cover designations such as "High-Altitude Test Center," "Air Group S", etc.

†† In 1935 the Luftwaffe had 372 bombers at its disposal (Do-XI's, Do-XXIII's, and Ju-86's), as well as 450 Ju-52's, more than 51 He-50 dive-bombers (which were assigned to fighter units), more than 251 fighter aircraft (Ar-64's, 65's, and He-51's), 590 reconnaissance aircraft in the Army air units (270 He-46 tactical reconnaissance aircraft, and 320 He-45's, long range, strategic, reconnaissance planes), and 119 naval aircraft.

** This section is based primarily upon the studies of Generalleutnant (Ret.) Bruno Maass and General der Flieger (Ret.) Hellmuth Felmy. See also pp. 59-60.

The top echelon, then being organized into the Reichs Aviation Ministry, promised to make some quick and practical changes, especially in the all-important field of training. Because of the need for secrecy the organization of the training program had to be kept as simple as possible.

In the Spring of 1933, the Flying School Command (W) was established within the Reichs Aviation Ministry and was subordinate to the State Secretary. The Command received its instructions from the Air Command Office, and had the mission of making preparations for the establishment of military flying training schools, as well as supervising the military aviation courses given in the Commercial Flying Schools.

On 1 April 1934 the Flying School Command (W) was transformed into the Inspectorate for Flying Schools (Inspektion der Fliegerschulen), which, like the older agency, was subordinate to the State Secretary and received orders from the Air Command Office. The Inspector of Flying Schools was assigned the task of supervising the work of the Flying Schools, while his chief of staff was also Commander of the Air Armament Training Schools.

In accordance with instructions issued by the Inspector of Flying Schools, the training of reserve fliers was under the direction of the Inspector of Reserve Fliers (Inspekteur der Fliegerreserve), a man who was also President of Sport Fliers, Ltd., and who was directly under the command of the State Secretary.*

Certain training facilities were at the disposal of civilian aviation. These were the training schools operated by Aviation, Ltd. in Berlin-Staaken, Wuerzburg, and Boeblingen, the installations of the German Commercial Flying School in Braunschweig, Schleissheim, Warnemuende (sea-plane training), and List on the island of Sylt,† as well as the installations

* See Chart No. 7. The Organization of Schools and Training Centers Subordinate to the Inspectorate of Flying Schools, 1 April 1934.

† Even prior to 1935, Aviation Ltd., and the German Commercial Flying School had been used in the flying training program of the Army.

maintained by Sport Fliers, Ltd., and the ~~Akeflie~~ groups, all of which had been transferred early in 1933 to the German Sport Fliers, Ltd.*

Besides these, there were training courses for a total of 1,000 persons in about twenty aircraft and aircraft engine factories and in the three main repair depots of Lufthansa. The aircraft training program drew upon instructional personnel from the civilian training installations for pilot training, from former fighter pilots, and, in part at least, from National Army personnel trained in fighters at Lipetsk and Army instructors engaged in observer training under National Army programs.

Trainees were selected from among the candidates suggested by the Army, Navy, and State Police Headquarters, and were to have completed their basic military training. Well disguised induction centers were set up by the government to administer the appropriate psychological and technical examinations to officer candidates for the Luftwaffe and to make the necessary selections from the applicants. Those who were chosen were assigned, as before, first to the Army or Navy, at whose schools they took their preliminary training. Officer aspirants who had served in the air forces in World War I were assigned to special courses designed to test their aptitudes and actual abilities and were then given refresher training to bring them up to date.

The task of training pilots and keeping them in practice was increasingly assumed by Aviation, Ltd., by the Commercial Flying School (which also provided instrument flight training), and by Sport Fliers, Ltd. Fighter, observer, and technical training were handled in military courses held at the Commercial Flying Schools, the fighter pilots training at Schleissheim, and later at Werneuchen. Observer training (land) was given at Braunschweig (Group W), and sea observation training was carried out at Warnemuende (Group W), while the training of technical personnel was accomplished not only by the Commercial Flying Schools, but also by the aircraft industry, and Lufthansa establishments.

* In the summer of 1934, 2 reconnaissance schools, 1 fighter school, 4 bomber schools, 1 air armament school, 12 A/B schools and practical training centers, 6 C schools, 2 pilot training schools (sea), 2 instrument flying schools, and 2 railway lines were available for Luftwaffe use.

The fighter training center which was established 1 September 1937 at Werneuchen and that at Schleissheim were designated on 1 March 1939 as Fighter Schools 1 and 2.

The First Air-Units

For security reasons the first air units were incorporated into the schools. This shortened the training period and obviated the necessity of completing the training within the units themselves. On 1 July 1934 so-called "transition personnel," comprising fifty percent of the authorized full strength of each unit, began to form the cadres required for phase two of the mobilization plan, a plan which would draw heavily upon the schools. In the particular circumstances of the time, this was a daring step and had to be accepted as a political necessity.

The official announcement of the existence of the German Luftwaffe (10 March 1935) and the announcement of compulsory military service which came just six days later marked a turning point in the development of the German Air Force. During the period of secrecy Germany's military leaders had learned a good deal, and now that there was no further need for deception operations were simplified in all sectors. Security regulations were abolished with an abandon which seemed foolhardy and risky to the older generation of military men. Equipment which had been kept secret was now exhibited openly in public demonstrations. Nevertheless, the effects achieved justified this method of announcing Germany's military prowess to the world. It was imperative, however, to uphold Goering's promise, repeated on 1 March 1939, that "We shall continue to maintain our lead."

It was characteristic of this stage of development that although the training program was still accorded top priority, the task of activating more units and equipping them more completely gradually began to increase in importance. With the abolition of secrecy, a certain decentralization of command became feasible, and, in the specialized inspectorates, experts in the appropriate fields were openly assigned to top positions. The Reichs Aviation Ministry, thus relieved of some of its responsibility, could concentrate upon more creative activities and could take its place as a central clearing house for manuals and directives.

The fact that a politically important figure such as Goering was in charge of the new Luftwaffe was instrumental in assuring

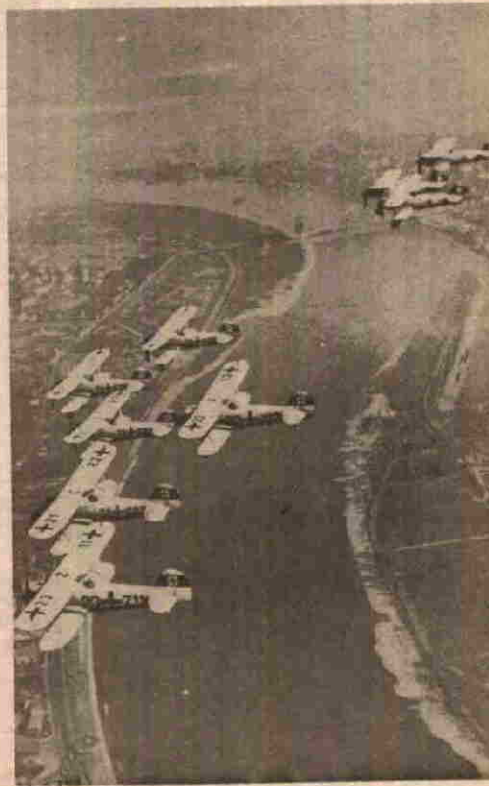


Figure 15

Fighter of the newly reestablished Fighter
Wing "Richthofen" flying over the Rhine
River in 1936.

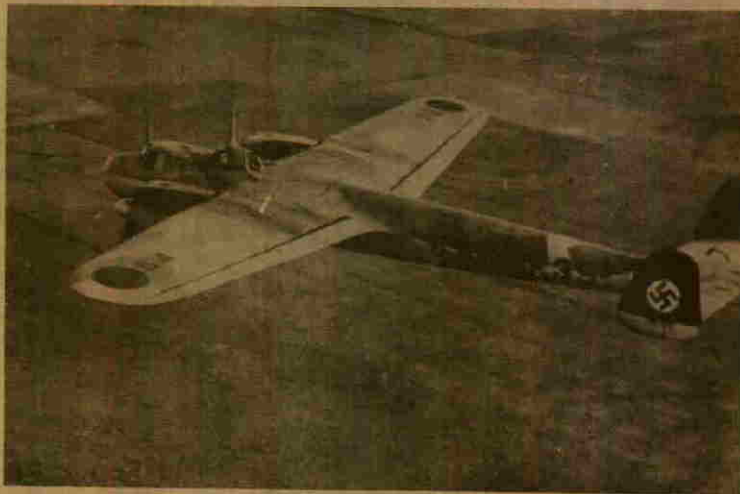


Figure 16

The Dornier Do-17 Bomber, an aircraft of limited value for strategic purposes. Early models of this aircraft could carry only one 550 pound bomb.

its future as an independent and separate branch of the Wehrmacht, with no fears that it would become a part of either the Army or the Navy.* This meant that the Luftwaffe, in its infancy, had almost effortlessly achieved an independent status, for which the air forces of other great nations (such as the United States) had to fight for years to attain.

The Commander in Chief of the Navy pleaded in vain for a naval air force (which would be familiar with the principles of naval warfare and with naval air tactics) made up of coastal reconnaissance, bomber, and fighter units with ship-based units and aircraft carriers. He wanted his own personnel recruited from and trained by the Navy in naval air tactics. In making these demands, Navy leaders argued that air power was not merely a supplemental aid to sea power, but was an integral element in the conduct of modern naval warfare, and that those responsible for waging such warfare must be in a position to employ it whenever necessary as required for coordinated underwater and surface operations. Although Goering refused to accept the basic premise of this reasoning, he did cooperate with the Navy to the extent of providing appropriate training, joint maneuvers, and a comprehensive signal communications network. This did not satisfy German Navy leaders, who found it difficult to reconcile themselves to a situation so far from the goal they had hoped to attain.

That the Army finally accepted the decision to create an independent Luftwaffe was probably due in large part to the presence and personality of Wever, who had been an Army officer before his appointment as Chief of the Luftwaffe General Staff. It was natural, of course, that the Army, which had always played the dominant role in German military affairs, often found it difficult to adjust to the fact that it did not have all of the instruments of warfare united under its command.

Since Germany's limited raw material resources, production facilities, and financial means were insufficient to establish strong army and navy air units as well as a strong strategic air

* The entire flak artillery force was integrated into this new Luftwaffe.

force.* Goering, the adamant fighter for a unified air force, became the authority responsible for allocating air and flak units to other branches of the Wehrmacht. In so doing, he was careful to maintain the integrity of the Luftwaffe's officer corps.

In the early 1930's the concept of thinking of the Wehrmacht as a whole rather than in terms of each of its components had not yet become an automatic response, especially since the top-level command organization of the Wehrmacht seemed to be uncertain.† Yet, the lessons taught by World War I made it clear that the Luftwaffe would have to expand its original mission to include not only aerial reconnaissance and protective air cover for the ground forces and ground force installations, but also close air support for Army operations and air transport operations. This idea was subsequently confirmed during Germany's involvement in the Spanish Civil War (1936-1939). The High Command of the Luftwaffe bore the responsibility for broadening the scope of air activity without dissipating the Luftwaffe's striking power.

Although the Wehrmacht had a commander in chief of its own until 4 February 1938, when Hitler arrogated this post to himself, Goering's unique status as the Fuehrer's closest associate enabled him to circumvent many of the top-level decisions or, at times, to present problems directly to Hitler by side-stepping the Reichs Minister of War (von Blomberg).

* Editor's Note: The author frequently refers to Goering's acceptance of Douhet's principles, and occasionally mentions a "strategic air force." It is doubtful whether Goering envisioned a strategic air force in the fullest sense of that term, although he seems to have appreciated this idea in a more limited way, such as might be necessary to achieve a victory in a European war.

† Editor's Note: It is certain that Goering never reached the point where such a response was "automatic." His comments that "Everything that flies belongs to me," and "The Luftwaffe will never relinquish any of its troops to the Army" are indicative of his unwillingness, even late in the day, to think in Wehrmacht-wide terms. See various documents relating to Goering, D/I/2, Karlsruhe Document Collection. See also p.81.

The Commander in Chief of the Luftwaffe was to be guided by Paragraph 70 of Luftwaffe Service Manual 16 of March 1940 with respect to coordination with the Army and the Navy. This stated that "the Commander in Chief of the Luftwaffe will integrate offensive and defensive operations in constant coordination with the Army, Navy, and civil authorities in such a way that the overall conduct of aerial operations will be most effective."⁷

Bomber Units

Bomber units, including dive-bomber units, and the strategic reconnaissance units under the Commander in Chief of the Luftwaffe were to constitute the strategic air force.* Activation and development of these units had top priority since the key officers on Goering's staff were firm champions of the concepts of Douhet, and thus tended to dwell upon the idea of attack. Motivated by Goering's directive, which was presumably based upon Hitler's suggestion, the Luftwaffe General Staff began in 1935 and 1936 to concern itself with the possibility of a war with Soviet Russia.⁸ The development of a long-range bomber, dubbed the "Ural bomber" by the first Chief of the Luftwaffe General Staff, Wever, was recommended in order to place the Luftwaffe in a position to activate a number of long-range bomber units. However, in 1937, because of circumstances which are not clear even today, but may possibly have arisen from political complications, the project was dropped.⁷

Shortly thereafter the General Staff again requested developmental work on a long-range bomber. But, when the war began, Germany still had no aircraft of this type at her disposal. The most important bomber aircraft of the Luftwaffe were the multi-purpose, twin-engine bombers, especially after the partial replacement in 1937 of the unsuitable Do-XI's and Do-XIII's, the Ju-86's, and the provisional, but robust, Ju-52's and their

* See footnote p. 92.

⁷ See p. 79. See also Richard Suchenwirth, Historical Turning Points in the German Air Force War Effort, USAF Historical Studies No. 189, Maxwell AFB, Alabama: USAF Historical Division, June 1959, pp. 40-44, 76-90.

complete replacement in 1938 by the modern Do-17's and the He-111's. The super-speed bomber, the Ju-88, was soon to appear on the scene.* Because of its speed (about 280 m.p.h.) and its supposedly tremendous operational range, Luftwaffe leaders held great hopes for it and planned to produce it in large numbers. By this time German aviation specialists had become exponents of dive-bombing, so that the Ju-88 was modified, especially in the wings, to make it capable of diving performances.

The activation of bomber units progressed smoothly until the outbreak of the war. In 1936 there were five twin-engine bomber wings, consisting of sixteen groups,† and by the end of 1937 there were ten wings. Besides these, the needs of Legion Condor in Spain had also been satisfied.†† Between December of 1937 and the beginning of World War II the number of available twin-engine bomber wings was increased from ten to thirteen by forming additional wing headquarters and bringing together a number of formerly independent groups. Thus there was no actual increase during this period in the number of groups or in the overall fighting power of the entire German bomber force, the total number of groups remaining what it had been on 1 November 1938, thirty.

When one recalls that the activation schedule of the Luftwaffe envisioned the organization of eighteen full-strength twin-engine bomber wings with a total of fifty four groups by 1942, instead of the actual total of only twenty four groups in 1939, it is easy to see that the Luftwaffe was bound to be unprepared for a conflict as widespread as World War II.

* Editor's Note: See figures 16, 17, and 18.

† The 152nd, 153rd, 154th, 155th, and 253rd Bomber Wings. The peacetime strength of a German bomber squadron was 18 aircraft. The mobilization and wartime strength was 9 aircraft on the line and three in reserve for each squadron. Wings consisted of three groups at this time, while groups had three squadrons. See folio A/II/2a, Karlsruhe Document Collection.

†† Aircraft assigned to operations in Spain were turned over to the Spanish government when Legion Condor returned to Germany in May of 1939.

Dive-Bomber Units

Concern over the possibility of a war on two or more fronts led Luftwaffe leaders to seek new ways and means to achieve the greatest possible effect with the fewest possible aircraft. Prior to the war Germany had no really adequate bombsight at her disposal, and the optical sights available were in use only in a few experimental aircraft. Moreover, even the most experienced bombardiers could score only mediocre results with the best German bombsights. Because of the need to make "every plane count," the Luftwaffe High Command was anxious to produce aircraft which could achieve much higher scores in bombing accuracy.

In 1933 Ernst Udet made a visit to the United States, where he was profoundly impressed by the dive-bombing demonstrations carried out by Curtiss "Hawk" aircraft.* Udet, an old World War I fighter pilot, soon became the most ardent supporter of the dive-bombing concept, and persuaded Goering to allow him to purchase two Curtiss "Hawks" for experimental use in Germany. The tests made at Tempelhof, and later at Rechlin, greatly impressed many of the Luftwaffe and Army observers who were present. To them it appeared that the dive-bomber was especially suited to Germany's concept of Continental warfare.† Furthermore, the test aircraft achieved more than 40 percent hits during the trials, something no regular bomber had been able to do with the bombsights then available. The dive-bomber was thus given a top priority in German aircraft development. By 1934 and 1935 the Commander in Chief of the Luftwaffe and his staff believed that:

Germany was so limited with respect to raw materials and gasoline that her production capacity and, in turn, her war potential, simply did not permit the construction of sufficient numbers of heavy bomber fleets. She had no choice but to limit herself to medium and light bombers with the highest possible degree of striking accuracy.⁹

* See figure 19.

† Editor's Note: Wolfram Freiherr von Richthofen was one of those who was initially opposed to the dive-bombing idea, but by the end of the war in Spain he had become one of its staunchest adherents.

The first Ju-87 "Stuka" made its appearance in 1935, and the development of this aircraft was given special impetus after 10 June 1936 when Udet became Chief of the Luftwaffe Technical Office. In 1937 the Ju-87 went into series production, and that year eight dive-bomber groups were activated (nine and one-third if one counts the dive-bomber groups of the Training Wing). However, to begin with, only a fraction of these could be equipped with the Ju-87, the Luftwaffe's most successful dive-bomber, and by the outbreak of World War II no new dive-bomber groups had been activated. It should be mentioned that, despite the high standards of training for dive-bomber crews, the aircraft themselves were quite vulnerable and their defenses were so inadequate that attacks were made in groups or when enemy opposition was relatively weak.

Fighter Units*

In order to assure the offensive Luftwaffe an opportunity to carry out its mission with full effectiveness it was clear that the home area, the civil populace, and the Wehrmacht, had to be adequately defended against enemy air attacks. In order to achieve this, fighter units were established.† The fighters available in the early thirties had extremely limited flight duration and consequently could be used only to protect limited areas. Locally confined as they were, the fighters were to be used within the framework of the overall air defense program to guard specific and militarily important objectives.

The first three single-engine fighter groups (then still equipped with the inadequate He-51 aircraft) were set up in 1935. By 1 April 1936 four more fighter groups and two wing staffs had been added, although not all of these were up to full strength. All of these units were outfitted with He-51's and Arado Ar-68's.†† A year later the fighter force comprised three

* Based on work done by Generalleutnant (Ret.) Bruno Maass.

† Before 1935, the idea of utilizing fighters to establish air supremacy and to provide bomber escorts still seemed to be a remote concept, as is reflected in the fact that fighter units were made subordinate to Air District Commands.

†† See figure 20.

wings, with a total of fifteen groups, all equipped as before.

On 1 November 1938 the Luftwaffe had four fighter wing staffs and seventeen and one-third groups at its disposal, plus the fighter group of the 2nd Training Wing and the group belonging to the Legion Condor. There were then only two groups still using Ar-68's, the rest having been equipped with the new Messerschmitt Bf-109 B. These groups were organized for employment in small units. In the course of transition training from the He-51's and Ar-68's to the Me (Bf)-109's -- this was carried out at the airfield Jueterbog-Damm -- there were extraordinarily high losses of airmen.

By the beginning of World War II the Luftwaffe had five single-engine fighter wing staffs and eighteen and one-third single-engine fighter groups, besides three extra squadrons, one of which was trained for night fighter operations.

Luftwaffe leaders planned to use long-range fighters as escorts for the bomber wings, but it was not until 1937 that the first Me (Bf)-110's, the aircraft which seemed eminently suited for this mission, were ready to be introduced.* In that year the first twin-engine fighters designed for long-range employment were organized into units at the Fighter School at Werneuchen. The 2nd Training Wing included one group of this type. On 1 December 1938 existing single-engine fighter units there were equipped with Me-110's as "destroyer" units, a title used because of their presumably greater striking power than conventional single-engine fighters and because of their mission of protecting the home area against enemy bomber attacks. This transition to Me-110's continued until the spring of 1940. Those units which for one reason or another could not yet be equipped with Me-110's were assigned Me-109-D's as a provisional solution.†

The day World War II began the German Luftwaffe had ten twin engine fighter groups, slightly more than half the number (eighteen) planned for the year 1942.

These aircraft (Me-110's) were not restricted to the specific target being defended, but were to engage attacking enemy

* This idea did not take form until about 1935. See p. 98 and figure 21.

† Only five groups had been so equipped by 1 September 1939.



Figure 17

The Heinkel He-111 bomber, which became a mainstay of Luftwaffe bomber units.

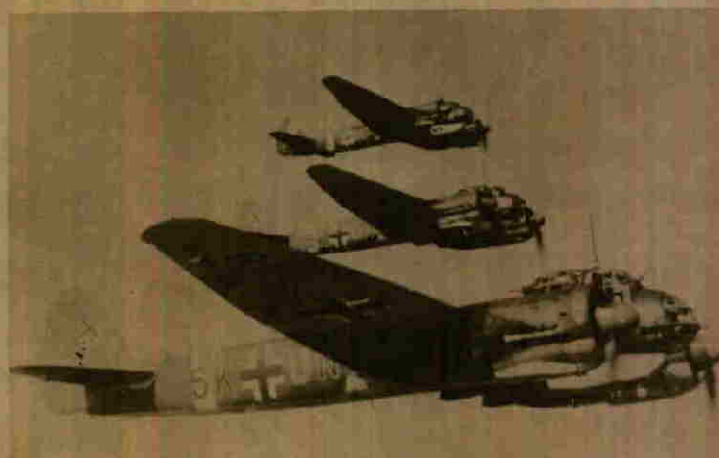


Figure 18

The "Super-Speed Bomber" of the Luftwaffe, the Junkers Ju-88.

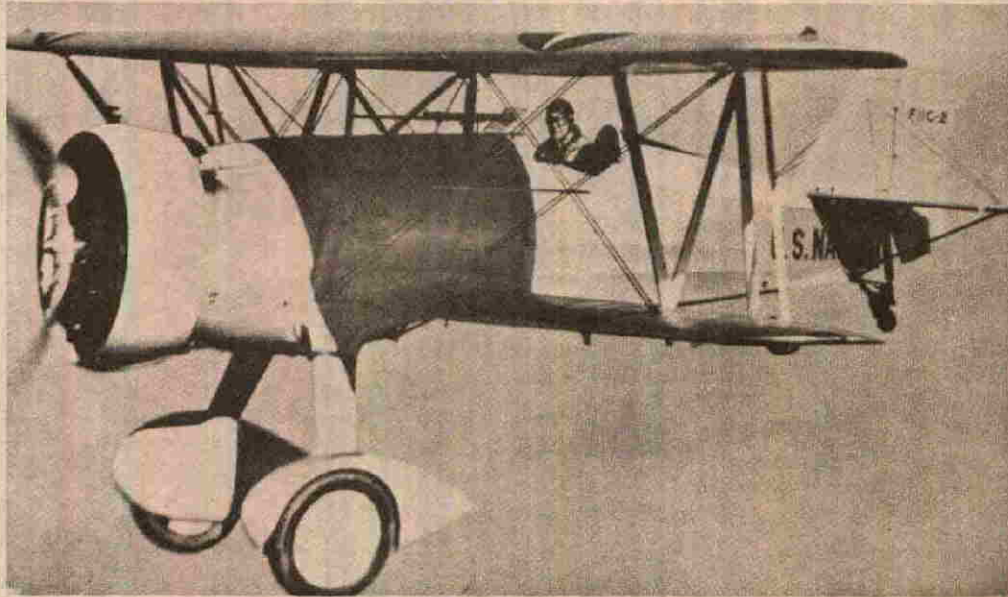


Figure 19

A 1933 model Curtiss "Hawk" fighter and dive-bomber, similar to the aircraft purchased by Udet, which won him over to the idea of dive - bombing.

aircraft and to pursue them as far as range permitted. In this type of action they were to be supported by single-engine fighter units which were assigned to the immediate combat area or by other twin-engine fighters temporarily assigned to the scene.* Both twin-engine and single-engine fighter units were to be distributed all over Germany in a checkerboard pattern, their peacetime stations to become their first assignment areas in the event of war. The first line of this air defense system lay just behind the Rhine River. No attempt was made to station fighter units west of the Rhine during peacetime, since it was believed that the aircraft warning system would provide sufficient time in which to alert all units east of the river. At the outbreak of war the German Air Force had very little radar equipment at its disposal which would have served as an extension of the air defense system or line toward the West, and the few available sets were deployed along the North Sea coast, to the west of Berlin, and in the western home defense area.

Germany had no fighter control system such as was in use in Britain, but, in the event of war, fighter units from less endangered areas were to reinforce the combat front. Maj. Hans-Wilhelm von Doering, an experienced World War I fighter pilot, suggested that the Luftwaffe concentrate all of its available fighters at the combat front right away, in order to utilize them in offensive operations over enemy territory and to serve as escorts for bombers. The Luftwaffe High Command rejected this proposal on the ground that strong enemy air forces, once they had broken through the initial defensive line, would encounter only flak artillery in the interior of Germany. There was even a danger that enemy attackers might get through the initial line without opposition if the skies were cloudy, since German fighter pilots were then untrained in instrument flying.

Fighters for the Defense of Army and Navy Units

Originally the Luftwaffe had planned to place a certain number of fighter units and aircraft warning units under the Army in the event of hostilities. In previous wars the Army had traditionally exercised absolute command in its operational area.

* For additional information concerning their role as long-range fighters see F/V/1b, Karlsruhe Document Collection.

However, war games had made it plain that a large number of airfields and other military installations in whose defense the Army could not be expected to take a great deal of interest, often happened to be located within the Army's operational area. It was therefore unfeasible to divide the struggle for air supremacy between the Army's fighters and the Luftwaffe's bombers. Because of the desire for a unified air command, Luftwaffe deployment and battle orders no longer provided for the assignment of fighter units to the Army. The same reasoning applied to the Navy, which resulted in the Luftwaffe assuming responsibility for protecting the coast.

Long-Range Reconnaissance Units

Long-range reconnaissance units had to be set up for the Commander in Chief of the Luftwaffe, the Air Fleets, the senior Air Commanders in charge of the conduct of operations, and for the Army. The Luftwaffe High Command gave a good deal of thought to the question of whether the Army really needed strategic reconnaissance units of its own or whether such reconnaissance missions could not well be taken over by the Luftwaffe. In recognition of the different types of activity involved, the Army and Luftwaffe strategic reconnaissance units were kept separate. Army units were expected to fly line reconnaissance missions over long distances in order to reconnoiter the traffic along highways and railways, while the Luftwaffe units had the task of flying zig-zag courses to discover enemy airfields over the countryside.

The Luftwaffe established five long-range (strategic) reconnaissance squadrons in 1935,* all of which were under the command of the Luftwaffe until 1937, and were responsible for aerial reconnaissance in support of Army operations in case of war. By the time World War II began, the Luftwaffe had a total of twenty-five long-range reconnaissance squadrons, ten of which were placed at the disposal of the Army High Command, while the other fifteen remained with the German Air Force (three of the latter

* Each squadron was to have nine He-45's. One squadron was to be assigned to search the Air Service Area. In 1936 the total was to be increased to five group staffs (strategic) with twelve squadrons, and in 1937 (when conversion to the new Do-17 was begun) to six group staffs and sixteen squadrons.

remaining under the direct command of the Commander in Chief of the Luftwaffe). Some of the units were still equipped with the He-45 aircraft, while the rest had the new Do-17's.*

Reconnaissance units specifically assigned to the Commander in Chief of the Luftwaffe had the mission -- their operations were subject to the tactical direction of the Intelligence Section of the Wehrmacht High Command - of carrying out peacetime high-altitude reconnaissance over the countries bordering on Germany. These units were under the command of Capt. Theodor Rowehl, and on 1 January 1939 operated out of the headquarters in Oranienburg as the "Experimental Station for High-Altitude Flight" (Versuchsstelle fuer Hoehenfluege). At the outbreak of the war, the Aerial Reconnaissance Group, Office of the Commander in Chief of the Luftwaffe, was organized from personnel and aircraft of this organization.†

Tactical Reconnaissance Units

The tactical reconnaissance units were designed for combat, tactical, and artillery reconnaissance, all missions which were closely connected with Army operations. The degree of specialization required by these tasks necessitated the organization of very small units, each (Army) tactical reconnaissance squadron requiring a large additional staff of non-flying personnel.

The first two squadrons of this type were formed in 1934, and a year later five additional squadrons were organized from the graduates of the Reconnaissance Schools at Braunschweig and Hildesheim. By 1936 the Luftwaffe had activated a total of fourteen (Army) reconnaissance squadrons, which were assigned to the six newly-formed (Army) reconnaissance group staffs. In the Spring of 1937 four additional squadrons were organized, so that by 1 July of that year each of the six reconnaissance groups had its full complement of three squadrons. The Luftwaffe officially transferred the Army air units to the control of the Army on

* This information was furnished by Generalleutnant (Ret.) Bruno Maass in an interview held on 17 April 1958.

† Editor's Note: See Generalleutnant (Ret.) Hermann Plocher, The German Air Force versus Russia, 1941, USAF Historical Studies No. 153, Maxwell AFB, Alabama: USAF Historical Division, ASI, July 1965, pp. 16-17.

1 July 1938, and the Army activated few reconnaissance units prior to the opening of World War II. On 1 August 1939 the strength of Army reconnaissance units stood at thirty squadrons, a force which was to be expanded to thirty-six in the event of mobilization.

In the beginning the strategic reconnaissance units were equipped with He-46 and later with the He-45, both well-constructed and very robust aircraft. After 1937 the faster Hs-126's replaced these models.*

Luftwaffe Signal Forces†

The Army Signal Communications Forces were responsible for training signal communications personnel for the Luftwaffe. Their Inspectors, Generalmajor Guenther von Kluge and Col. Erich Fellgiebel, provided exemplary backing for the work of Lt. Col. Wolfgang Martini, the man appointed 12 July 1933 to take charge of signal communications matters in the new air forces.†† Martini, an officer with great initiative, creativeness, and an intuitive sense that enabled him to grasp the tactical and technical demands which might be made upon an air force signals organization, spared no effort in developing his group into a model unit. The work accomplished within the Luftwaffe during the preparatory period (1933-1935) also helped him by establishing a useful foundation upon which to build.

The first unit to be activated (1 April 1934) was the Air Signal Communications Company of the Reichs Aviation Ministry and was set up in Potsdam-Eiche. Others followed on 1 October of that year.** Luftwaffe leaders had already considered the

* The Army also had mixed squadrons of strategic and tactical reconnaissance flights. See figure 22.

† This section is based upon an interview of General der Luftnachrichtentruppe (Ret.) Wolfgang Martini by the author.

†† On 15 May 1933 all German military and civilian aviation agencies were united under the Reichs Aviation Ministry headed by Hermann Goering.

** The Flying School Command (W) had carried out the training of air and ground radio personnel in the Reichswehr. However, the German Navy provided all of the radio personnel for naval air units until 1941, detaching them permanently to the Luftwaffe.

possibility of having a signal communications branch of their own, a need which became especially apparent during the several day-long war games conducted by General Wever in November 1934. Wever and his staff recognized the necessity of assuring a constant availability of communication channels for the transmission of Luftwaffe orders and instructions.

Lt. Col. Martini, a former Army officer who had transferred on 1 May 1934 to the Luftwaffe, had assumed the position of Chief of the Air Signal Communications Branch of the Reichs Aviation Ministry and, with his thinking oriented to the entire Wehrmacht, was tremendously influential. He managed to uphold a feeling of unity between the signals units of the Reichs Aviation Ministry and those of the Army and Navy, and provided the necessary coordination with the Reichs Postal Service.¹⁰ Cooperation between this new Air Signal Communications Branch and the Air Command Office* was outstanding in every respect. Liaison officers from both the Army and the Navy were assigned to insure that matters affecting the entire Wehrmacht were properly coordinated.

It was unfortunate when the Air Signal Communications Branch was established that the Commander in Chief of the Army (who had previously been so generous in providing personnel) released only fourteen officers to the Reichs Aviation Ministry. The Navy, however, released no naval communications officers at all to the Luftwaffe. This situation was partially offset by the fact that the Army Ordnance Office, the Reichs Postal Service, and German industry released enough experienced electrical engineers to permit the early establishment of an air signal communications engineer corps.

Still, it was imperative that a fully-qualified officer corps for the air signal communications forces be formed as soon as possible. Candidates from a number of categories were available, including inactive air force personnel from World War I, reserve officers from the Army Signal Communications Branch, Navy officers with radio training, and officers from police organizations. In 1934 these candidates were trained in two courses held by the Army Signals School, and were then sent on to elimination courses at the Army Signals School at Jueterbog and the Army Sport School at Wunsdorf.

* This office later became the Luftwaffe General Staff. See Charts No. 8, 9, 10.

From the point of view of command, the air signal communications forces were organized so that the signals consultants at all of the higher level agencies were simultaneously the officers in charge of carrying out all of the missions in this field. Success of these forces depended upon the tactical and technical ability of the officers and the technical achievements of the engineers, civil officials, and specialized non-commissioned officers. Extreme care in the selection of officers, intensified training of all personnel at the Signal Communications School in Halle, a thorough orientation in the requirements of serving flying units, and the frequent assignment of signal communications personnel to Luftwaffe schools for orientation training, all helped to contribute toward the realization of the goals of signals units.

The Luftwaffe's signal communications forces grew rapidly from modest beginnings in 1935 into a very strong organization.* On 1 October of the following year five signal communications battalions and one signal personnel replacement battalion were established, and by the end of 1936 four additional signal personnel replacement battalions were being formed. In 1937 the Luftwaffe organized one signal training battalion, one signal training and experimental regiment, three signals schools, one advanced technical school (in Halle), one air traffic-control company, one replacement company in each Air Service Area, and an Air District Signal Communications Company in each Air District. The Luftwaffe also established a Main Airfield Signal Communications Company (Leithorstnaehrichtenkompanie) for each airfield area.

Following the reorganization of the Luftwaffe General Staff and the Reichs Aviation Ministry (2 June 1937), Martini and the air signal forces were organized under the General Staff of the Luftwaffe as Branch 7, Air Signal Communications Branch.† Martini thereafter commanded this organization, the signal communications branch in the office of the Commander in Chief of the Luftwaffe, and the Cryptographic Section (Chiffrierstelle) of the Reichs Aviation Ministry. From this post he saw to it

* On 26 February Hitler announced the creation of a new branch of service, the Luftwaffe, whose activation became effective 1 March 1935.

† See Chart No. 11.

that all important agencies of the Luftwaffe had officers from the Air Signal Communications Branch.

From 1937 on the inevitable and necessary cooperation between the technical agencies of the Reichs Aviation Ministry and industry suffered somewhat because of the friction developing between General Martini and State Secretary Milch.* This, however, did not affect procurement in any way.

The Luftwaffe Signal Communications Forces were assigned the following missions:

(a) To carry out signal communications services, the establishment of facilities between Luftwaffe command posts and all subordinate agencies in the field of communications, and to provide communications channels from Luftwaffe command headquarters to motorized Luftwaffe and flak artillery units on the march.

(b) To control air traffic by promptly establishing reliable lines of communications between weather observation stations, airfields, airfield commands, emergency fields, etc., in order to insure flying safety in peacetime and in time of war, and by establishing a reliable network of direction-finding beacons and other ground navigational aids, and in war to provide ground-to-air direction of bomber units.

(c) To maintain precise air surveillance over the important areas in order to detect the appearance of both friendly and enemy aircraft, and to report promptly to the headquarters responsible for military and civil air defense operations.

(d) To continue the expansion and operation of a radio

* Part of the difficulty stemmed from the fact that Martini was subject only to the wishes (or nearly so) of State Secretary Milch, since the Air Signal Communications Branch (7) was after 2 June 1937 an integral part of the Luftwaffe General Staff.

† After 1938, apart from the Navy's aircraft reporting units along the coast, the Luftwaffe Signal Communications Branch assumed full responsibility for aircraft reporting for the entire Wehrmacht.

intercept network which even in peacetime would be capable of closely monitoring the radio communications of the air forces of neighboring countries, and which in time of war would be capable of keeping all enemy radio communications under surveillance (if necessary, with the aid of additional, reliable, special communications lines). Later on this mission was expanded to include ground control of fighter and dive-bomber units, radio-frequency warfare such as radio deception, jamming, and the protection of German communications against interference or jamming.

According to the organizational plan of 1938-39,* the Chief of the Air Signal Communications Branch (Branch 7 of the Luftwaffe General Staff) had command after October of 1938 over the Cryptographic Section (known after 1 January 1937 as the Central Interpretation Section), over the Air Signal Communications Battalion of the Commander in Chief of the Luftwaffe in Potsdam-Eiche, the 6th Radio Intercept Company (Motorized), and over the Senior Commander of Air Signal Communications Schools. The air signal replacement battalions were organized on 1 April 1938 into Air District Signal Communication Battalions.

Signal commanders assigned to the First, Second, and Third Air Fleets were in command of the 1st, 2nd, and 3rd Air Signal Regiments (Motorized), while those assigned to the Luftwaffe Command Vienna and Luftwaffe Command East Prussia commanded the 4th and 6th Air Signal Communications Battalions respectively. Besides these organizations, the 88th Signal Communications Battalion, serving with the Legion Condor in Spain, provided a useful body of practical experience for all of the signals units of the Luftwaffe.

On 1 October 1937 the mobile radio intercept service was expanded, and by 1939 there were seven platoons of this sort, two of them assigned to each of the three signal communications regiments and one to the 4th Air Signal Communications Battalion. In addition, there were the three radio intercept and radio direction-finding companies of the signal communications battalion under the Commander in Chief of the Luftwaffe, the Air Signal Communications Training Battalion, and the Air Signal Communications Training and Experimental Regiment at Koethen. Thus,

* See Chart Nos. 12 and 13.



Figure 20

Arado Ar-68 E, which, with the Heinkel He-51, became a mainstay of the German fighter arm until after 1936.



Figure 21

The Luftwaffe's long-range Fighter, the Me-110.

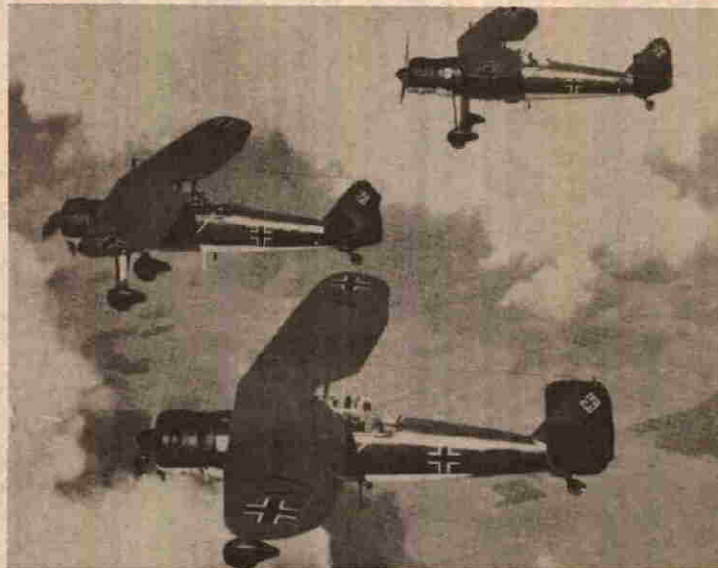


Figure 22

A formation of Henschel Hs-126
Reconnaissance Aircraft.

by the outbreak of war, the Luftwaffe had four radio monitoring command posts with nine radio intercept (monitoring) stations, plus the main radio direction-finding station at Glindow, which was a sort of supervisory agency for all Luftwaffe radio communications. This expanded radio monitoring network, supplemented by the Army and Navy networks, was able to cover all of the radio communications transmitted by Germany's neighbors, including Great Britain, French North Africa, the Balkans, and the southern part of the Soviet Union. The ten Air District Signal Communications Battalions, one for each Air District and for the Luftwaffe Command East Prussia, were subordinate to the signal communications commanders attached to the Air Districts. The broad scope of activities of the Air Districts made the missions of the signal battalions quite diversified. They were also in charge of the main airfield signal companies.

There were 44 main airfields, 13 assigned to the First Air Fleet, 12 to the Second Air Fleet, 13 to the Third Air Fleet, 4 to the Fourth Air Fleet, and 2 to Luftwaffe Command East Prussia. The commanding officers of the main airfield signal companies were also the signal commanders of their respective airfield areas, and were subordinate to the airfield commander.

Flak Artillery Units

Until the end of March 1935 the Reichs Aviation Ministry issued all orders to the Air Defense Branch and its subordinate Flak Artillery Inspectorate, which was the headquarters of all antiaircraft artillery forces.* One of the leading figures who played a pioneer role in the development and employment of flak artillery was Col. Guenther Ruedel, Chief of the Air Defense Branch.† As early as 6 December 1932 he established a development program within the Reichswehr, which was so comprehensive in scope that it was years before any modifications were required. The program was guided toward realization in close cooperation with the Army Ordnance Office and its subsidiary agencies, Ammunition and Ballistics, Heavy Flak Artillery, and Range Meters and Fire Control Equipment.

The transfer in March of 1935 of the Air Defense Branch to the Reichs Aviation Ministry as the Inspectorate for Flak Artillery and Air Defense did not necessitate any substantial changes

* Up to this time all flak units belonged to the Army.

† See figure 23.

in the mission of flak artillery forces, except that the new inspectorate assumed the responsibility for civil air defense.*

Meantime, the Navy was working on a similar flak artillery program, although the requirements for its antiaircraft development were very different. The Navy needed ship-based flak as well as fixed flak installations, the latter to be located primarily along the coast and at regular naval stations. Despite the inherent disadvantages in parallel development projects, the constant exchange of views and experiences with Army and Aviation Ministry leaders proved to be of great value to the entire air defense program.

Air defense for troop units was initially a matter for the Inspectorate of Infantry and the troops themselves, since military leaders thought that massed small-arms fire would provide ample protection against enemy air attacks. However, by 1932, development was begun on light and medium flak pieces designed especially for troop air defense. The Air Defense Department of Inspectorate 4 of the Army Command supervised the development of these weapons. In the project initiated on 6 December 1932, the goal of the flak artillery was described as "the destruction of enemy aircraft." There was no mention of flak units participating in ground fighting, a method of employment which grew out of dire necessity during World War II.† The tasks assigned to flak forces were always too numerous for the number of batteries available.

In the development of flak artillery the guiding spirit was Training Staff 3 (Army), which had its own staff of instructors at the drill area in Berlin-Doeberitz. Air defense problems were handled by the Reichs Aviation Ministry (B-Office), although most of the practical work was done by a volunteer organization,

* See Col. (Ret.) K. G. Jacob, "Der deutsche Luftschutz" ("The German Air Defense"), an unpublished study prepared for the USAF Historical Division, Karlsruhe Document Collection.

† ~~Editor's Note~~: There is evidence that some of the German forces in Spain (1936-1939) were the first to discover the effectiveness of the 8.8 cm. gun in direct fire against enemy armor. See documents pertaining to the flak artillery forces, F/VI/1, Karlsruhe Document Collection.

the Reichs Air Defense Association (Reichsluftschutzverband). The tangible results achieved in this area were rather inconspicuous, but the organization proved to be useful by creating public interest in this vital field, thereby preparing the way for more intensive development activities to come.

The weapons selected for development were chosen on the basis of the mission to be fulfilled. Those required for use against low-flying aircraft were 15-20 mm. antiaircraft machine-guns having an effective range of up to 6,560 feet and a 3.7 cm. medium flak gun having a firing range of about 9,840 feet. The latter weapon was to be extremely mobile, suitable for use by platoon sized units, and to be equipped with a central fire control and teletransmission.

For use against enemy aircraft the most indispensable gun was the 8.8 cm., which had an effective firing range of 22,960 to 26,240 feet. Each of these pieces weighed about nine tons and was equipped with a fire control set capable of automatically activating and turning off all of the firing elements of the gun. These guns were also coupled with the search-light units and sound locators, the latter having a range of seven and a half miles. The problem of beam direction-finding without optical aids was outlined as a future field for developmental work.*

Priority for development and production was given to the 2 cm., the 3.7 cm., and the 8.8 cm. guns and auxiliary equipment, with the development of barrage balloons second, and remote controlled apparatus taking third place. Efforts were also made to perfect the motorized flak forces.

At the end of March 1935 the flak artillery forces were officially transferred to the Luftwaffe, a move which assured close cooperation with Germany's combat air forces. Flak units also were able to gain a much closer familiarity with both indigenous and foreign air forces, with offensive air combat methods, with the principles and potentialities of aircraft employment,

* Supplemental instruments of defense were planned, which included barrage balloons and kites for altitudes up to 16,400 feet, barrage artillery rockets for altitudes up to 22,960 feet, and parachute rockets with attached barrage cables.

the operation of the aircraft reporting services, and the interaction of command and reconnaissance agencies of the flak artillery, the flying units, and the signal communications forces.* Antiaircraft defenses had to remain a single, closely-integrated entity. The only flak units not affected by the transfer were the stationary installations along the coast (whose mission included firing against naval targets) and ship-based antiaircraft artillery, which naturally remained under naval command.

In the beginning, it was the home air defense program which required the lion's share of the flak artillery. The demand for antiaircraft protection of Army forces from high-altitude bombing attacks did not come to the foreground until 1936. Nevertheless, flak artillery units (the number of which was never fully adequate for the demands) had to be left under Luftwaffe command in order to make it possible to establish a point of main effort if the need should arise.

It was more practical for the flak artillery to be under the Luftwaffe than under the Army, because the Luftwaffe was able to secure greater sums of money for testing and procurement than was true of the Army. The Commander in Chief of the Luftwaffe ordered all matters concerning procurement and development of flak equipment to be assigned to the flak artillery offices (now in the Luftwaffe) which had been handling these matters all along. It was a decided disadvantage, of course, that the German Air Force did not permit the Army to exert more influence upon these activities, and that it did not make the staffs of antiaircraft units more readily available to the Army. No attempt was made to inform the Army of the number of staffs and units activated during each year of the mobilization program, nor were flak forces encouraged to cooperate with the Army. Had these matters been more fairly handled it might have softened the Army's attitude toward the idea of a united flak artillery force under the command of the Luftwaffe.

By the autumn of 1935, the Senior Flak Artillery Commanders

* The ultimate consolidation of both air units and flak artillery in the Reichs Aviation Ministry also helped to make tow aircraft and other special equipment readily available for antiaircraft units.



Figure 23

Germany's top Flak Artillery officers, L.
to R : General der Flakartillerie Guenther
Ruedel and General der Flakartillerie
Walther von Axthelm.



Figure 24

An 8.8 cm. (heavy) antiaircraft
gun and crew in firing position
during the 1936 war games.

(assigned to the five Air Service Commands then in existence) had at their disposal fifteen heavy and three light flak artillery battalions, all motorized. The Flak Artillery School at Rerik was under the command of the Flak Artillery Inspectorate. In 1937 the training battalion at this school was redesignated the Flak Artillery Training and Experimental Battalion. On 1 April 1937 one flak regiment, consisting of one heavy and one light flak artillery battalions and one searchlight battalion, was assigned to the Luftwaffe Training Division (Luftwaffe-Lehrdivision).

The number of flak artillery battalions nearly doubled between 1935 and 1936, with the battalion remaining for the time being as the tactical unit.* There were 29 mixed and 8 light flak battalions, with 87 heavy† and 53 light and medium batteries and 29 searchlight batteries.†† Flak battalions had one heavy and one light personnel replacement battery each, which was to permit a doubling of units in case of mobilization or an acceleration of peacetime activation.

The third phase of activation began in October of 1937, and established one senior flak command (air), five regimental staffs, six mixed battalions, and nine light battalions, so that the total was 6 senior flak commanders, 11 regimental staffs, 1 flak commander (sea), 35 mixed battalions, 17 light battalions, and 1 searchlight battalion, altogether 115 heavy batteries, 14 permanent cadre batteries, 69 light and medium batteries, and 37 searchlight batteries.

It is significant to note that in 1937 a flak training regiment was assigned to the Luftwaffe Training Division, for the coordinated training of both flying and flak artillery forces. This made it possible to set up additional light flak artillery

* There were also five senior flak artillery commanders and six regimental commanders, whose duties were at this time primarily concerned with training and administration.

† See figure 24.

†† The stations of the mixed battalions were usually selected in accordance with the targets to be defended. The Office of the Flak Artillery Commander (Sea), in Kiel, existed in addition to and outside of the Air Service Command organization.

battalions for the protection of Army units, especially the mobile troop units. Each such battalion had a staff (headquarters) battery, a 3.7 cm. battery, and two 2 cm. batteries to convert most of the second battalions of the flak artillery regiments to mixed battalions like the first ones, and to set up additional heavy stationary batteries, most of which were permanently assigned to protect specific military targets. The Hermann Goering Regiment was assigned in 1937 to the flak forces.

In October 1938 the Luftwaffe initiated the fourth phase of activation of flak forces in conjunction with the establishment of additional top-level Luftwaffe staffs, creating positions in the ten Air District Commands for flak officers of the rank of Colonel or Generalmajor. These officers were made fully responsible for air defense activities within their respective areas. Within the framework of the fourth phase air defense forces increased in strength from 25 to 50 percent. In so doing, 9 new regimental staffs (counting the two flak artillery reconnaissance staffs), 10 mixed battalions (three light battalions had been deactivated), 5 fortress flak battalions, and 15 searchlight battalions were set up.

In order to facilitate the conduct of air defense operations in areas which had a number of high priority targets (such as armament plants), Air Defense Commands were established at Stettin and Berlin in the III Air District, at Leipzig in the IV Air District, at Duesseldorf in the VI Air District, and at Hamburg in the XI Air District. The flak artillery units stationed in the Air Defense Commands were subordinate to the Air District Commands via the regimental staffs. This step constituted an establishment of points of main effort in particularly threatened areas.

In addition, the Command Headquarters, Western Air Defense Zone (under the Senior Commander, III Fortress Flak Artillery) was established, which included 2 flak reconnaissance staffs, one in the Eifel and one in the Black Forest, and 5 fortress flak battalions. This new command was a part of the defense system for the West Wall.

The Western Air Defense Zone was designed to form a tightly-knit line of flak artillery defenses along the entire western border of the Reich, a line which enemy aircraft would have to cross before they came into the range of the flak units guarding

the specific military objectives. The Luftwaffe planned to restrict the enemy's ability to operate against Germany, to limit enemy air activity over areas occupied by the German Army, and, with the diversified weapons at its disposal, to provide a kind of "reception line" for the front. Flak forces were also responsible for protecting the bridges over the Rhine, the autobahns, and nearby industrial installations.

Luftwaffe Meteorological Service

During World War I an air meteorological service existed for the Army and Navy. It survived the end of the war in a considerably reduced form, becoming no more than a rudimentary artillery weather service. Although it was not until the development of civil aviation during the twenties that an air weather service was established under the auspices of the Reichs Traffic Ministry, by 1931 the service had already outgrown the assistance which could be provided by that Ministry. As a result, the Central Air Traffic Control Station was called into being and assumed supervision over the weather observation and reporting services. The state meteorological stations controlled only the day to day routine activities.

In 1933, the Reichs Meteorological Service, together with the air traffic control and air traffic supervisory units and all civil aviation agencies of this sort, also came under the authority of the Reichs Aviation Commission and, later, of the Reichs Aviation Ministry. The Meteorological Service became Branch III of the General Air Office,* and served as a base for the establishment of air weather services at Luftwaffe flying schools and airfields.

The organization of meteorological services began in earnest in 1935. Luftwaffe meteorological services were then separated from the civilian meteorological services by establishment of the post of Air Fleet Meteorologist, an office which entailed a close coordination with the staffs of the Air Fleets. The

* The General Air Office had five branches: Branch I (air traffic), Branch II (air defense), Branch III (meteorological services), Branch IV (aerial photography), and Branch V (ground organization and air traffic control).

meteorological services were also given a definite legal status in the Reichs Weather Service Law of 1935. During the same year the Luftwaffe abolished the Central Air Traffic Control Station and made its Signal Communications and Illumination Branch a part of Branch III of the General Air Office. The Air Weather Service Branch (Abteilung Flugwetterdienst) as well as the missions of the state meteorological stations were taken over by the newly created Reichs Office for Meteorological Services (Reichsamt fuer Wetterdienst), which was augmented by the Scientific Senate for Reichs Meteorological Services, made up of the directors of the state meteorological stations and a number of university professors. This made it possible to assign qualified meteorologists to all agencies down to wing staff, a step which had long been urgently necessary. From this time on, the meteorologists were present at every orientation session, every conference in which combat orders were issued, and at every situation briefing, and their tactical weather maps rested on the planning tables beside the strategic situation maps. All of this was supplemented by practice sessions for predicting weather conditions three to six or even twelve to fifteen hours in advance.

From 1935 on, the recruitment of meteorologists and weather service technical personnel presented certain difficulties. An attempt to relieve the situation was made by recruiting in the various German states candidates who were slated for instructional posts in allied fields, by offering courses in the newly created Reichs Meteorological Service School, and by providing on-the-job training at the various meteorological stations.

After the establishment on 1 August 1936 of the Luftwaffe General Staff the cooperation between this organization and Branch III of the General Air Office was exemplary. Flying personnel and meteorologists became an inseparable team, the meteorologists providing what information they could and the flying personnel keeping them informed of experiences gained during their missions.

The Meteorological Information Network (Wetterrundschreibnetz), established jointly by the Signal Communications Inspectorate and the Reichs Meteorological Service, united all meteorological stations by means of its own teletype network. In accordance with precise schedules, the district meteorological centers (the main meteorological stations in each state) forwarded their reports to this new agency. Whenever necessary, the basic network could

be supplemented by the special networks maintained by the various air fleets. The civil air weather services retained their former reporting network.

In the event of mobilization, the coding of weather reports, which had to be simple and foolproof, was to be handled as prescribed with appropriate mobilization symbols by a coding machine operated by the Signal Communications Forces. The weather services also worked out a coding method for use by weather reconnaissance aircraft in flight.

Luftwaffe leaders realized that, with the outbreak of war, many weather reports emanating from enemy territory or territory under enemy surveillance would not be received. This problem was partially solved by the establishment of a Central Meteorological Service Group (Zentral Wetterdienstgruppe), organized to prepare short-range, medium-range, and long range weather forecasts on the basis of incomplete reports received. This Group, made up of the most experienced meteorologists, and all of the meteorological stations, had to learn to work on the basis of partial or incomplete information. Neutral weather stations were assigned to check on the accuracy of the Group's forecasts, while radio sounding stations contributed to the more accurate construction and interpretation of high-altitude weather maps pertaining to conditions over enemy territory.

Experimental operations showed that the Central Meteorological Service Group had to be made as effective as possible, that high-altitude weather maps (500 millibars) and absolute and relative topographical maps, substantiated by the most accurate measurements possible, ought to be issued twice a day, and that special weather reconnaissance units with experienced meteorologists were an absolute necessity.

The Central Meteorological Service Group prepared air climatologies and air weather studies for all European countries in coordination with Branch 7 of the General Staff, collated scientific materials for use in medium and long-range weather predictions, promoted the development of meteorological equipment and supply channels for such equipment, including also radio sounding equipment, airborne meteorological equipment, mobile weather stations, and unmanned reporting stations, and provided material for use in meteorological courses in Luftwaffe schools.

The expansion of Luftwaffe meteorology services also helped to simplify the weather services of the Navy, the Army artillery, and the flak forces, for it was no longer necessary for batteries to take constant temperature readings, since air density and wind conditions could be ascertained for any given area and time from the aerological network readings issued twice a day by means of space and time interpolation. This method was passed on to countless meteorologists in the official training courses.¹¹

The Development of the Luftwaffe Ground Organization

The Luftwaffe Administration Office in the Reichs Aviation Ministry was the agency responsible for issuing the orders pertaining to the development of the ground organization. Within the Luftwaffe Administration Office this responsibility was exercised by Branch III (Billeting, Physical Installations, Construction). Execution of these orders was the responsibility of agencies within Air District Commands. These agencies, in turn, worked closely with the airfield commands (later airfield area commands [Flughafenbereichskommandos]).

The airfield area commands, which at the same time were main airfield commands (Leithorstkommandanturen), were the higher headquarters for all of the peacetime airfields, emergency airfields, field landing areas, combat landing fields, and dummy airfields located within these respective areas. They were responsible for keeping these installations supplied with all necessary items and for supervising the activity of the ground organizations there. The number and size of the airfield area commands were determined by the tactical significance of the areas concerned.¹²

Apart from the commercial airports, there were until 1933 only those few airfields established and supported by the Reichs Traffic Ministry that were used by the Commercial Flying School, Severa. Although these fields were capable of meeting only the most primitive requirements in terms of size, quality of runways, billeting facilities, and repair services, they were taken over by the Luftwaffe in 1933 and enlarged and improved for extended operations. The fields at Warnemuende, Wilhelmshaven, Norderney, and Borkum were taken over for naval units, while those at Stettin, Staaken, Braunschweig, Wuerzburg, Schleissheim, and Boeblingen were for land aircraft units.

The Air Command Office supervised the establishment of requirements for airfields needed by the Luftwaffe, taking into consideration especially the aspects of training, operations, and organization at such bases. It then issued appropriate instructions to the Luftwaffe Administrative Office. Because of the required size of the landing fields the latter agency soon had differences of opinion with the Luftwaffe Technical Office, which immediately necessitated cooperative work with other command agencies in the Reichs Aviation Ministry, such as the Signal Communications Branch, the General Air Office, and associated meteorological agencies.

After all elements of the problem had been examined, the Air Command Office sent a summary of its findings to the Luftwaffe Administrative Office, which then took the necessary steps to purchase the selected territory. Later, in conformity to instructions from the Air Command Office, the Air Service and Air District Commands sought out the proper locations for the new fields themselves. The Air Command Office then passed these recommendations on to the Luftwaffe Administrative Office for investigation and comment. The requirements were so extensive that all of the available engineers and skilled and unskilled workers, and all of the raw materials provided by the German iron-processing industry, were fully utilized.

In selecting locations for new airfields one had to give heavy consideration to their purpose, their future integration into existing Air Service Commands, the suitability of the selected areas from the point of view of the pilots and from the standpoint of construction, as well as to the economy of choosing a particular site.*

The peacetime development of airfields was generally completed by the end of 1937, although not all of the buildings were then ready for occupancy. Individual installations scheduled for completion in 1942 were added later as the need for them arose. By 1 September 1939 Germany possessed airfields for

* Cover and deception actually required that airfields be established in sparsely populated areas affording good ground cover, preferably in wilderness areas. Such construction was then carried out in coordination with the Reichs Labor Service (RAD).

schools, flying units, and supply units, for land and sea air forces, as well as commercial airports and fields operated by industry.

Despite all efforts at deception and camouflage, it was logical to assume that the size and location of German airfields, and the number of troops assigned to them, had not remained a secret. This, combined with the fact that the uniform distribution of units along the borders of the Reich created the danger of airfield congestion if operations became limited to a single sector of the frontier, and that fighter units would require unoccupied airfields as alternate landing fields in the border zones, led to the establishment of field airports (E-Haefen). Maneuvers carried out in the autumn of 1936 in the Welzow area (a poorly organized and equipped area from the point of view of aviation) inspired the field airport system. This idea was perfected during the latter part of that year and in 1937 as an instrument for the mobile conduct of air operations, and was exploited with spectacular success by the Air Service Command concerned during the Sudeten crisis of 1938.

The network of field airports increased in density in the eastern part of Germany. By 1 March 1938 the Luftwaffe had 84 of these fields completed or in some major stage of construction, while 14 others were scheduled for preparation, and on 1 September 1939 the Luftwaffe could boast of a total of 89 first and second class field airports ready for action.* Of the fields ready at the opening of World War II, 24 were in the zone of the First Air Fleet, 9 were in that of the Second Air Fleet, 40 in the Third Air Fleet area, and 16 were in the zone of the Fourth Air Fleet.

* Directives issued 28 April 1939 prescribed the preparation of 180 airfields by 1 April 1941, 92 in the first category and 89 in the second class, while 25 were to be used as Luftwaffe command posts. By the outbreak of war, 55 of the 59 first class fields, and 25 of the 30 second class fields (of the total of 89 completed fields), were situated in the East. The other first class fields were near the coast, primarily for naval use. This indicates to some extent the German High Command's primary emphasis upon possible troubles in the East rather than in the West.

Field airports had to be so well camouflaged that they could not be recognized from the air or on the ground. For this reason, broad, sweeping lawn areas had to be avoided as taxiing areas in order to create the impression of small cultivated fields of a typical agrarian district. Feeder roads and railway spur lines, hangars, and other structures had to be meticulously concealed.

All operations at field airports had to comply strictly with prearranged schedules, and all facilities at these sites had to be ready for possible use within a few hours' notice. The most significant defect in the system was the lack of workshops and repair depots, which meant that the main fields, the air parks, and supply and procurement offices had to help fill the void. This shortcoming proved to be more troublesome as the war progressed.

Measures by the Ground Organization to Insure Mobility
of Bomber Units

The High Command of the Luftwaffe insisted that bomber units be capable of transferring from one base to another, if necessary over long distances, under their own power in order to be able to establish points of main effort at crucial times. This was to be accomplished at regular flying speeds so that these units would be available and ready for immediate commitment upon arrival at the new station. This required a separation of the air units from their less mobile ground organization. In order to solve the problem, the required ground service personnel (apart from a few specialists who invariably accompanied the flying units) were organized into motorized airfield service companies, two of which were assigned to every flying unit. In this way it was possible to send the companies that were not needed for current operations to other sectors of the front or even to other theaters of operation. Thus, when the flying units landed at their new bases they found the necessary ground service personnel already there and ready to go to work. This arrangement became known as the "hotel system."

In case of emergency, of course, ground service personnel could also be temporarily flown in by transports to other stations to help in making provisional repairs.

CHAPTER 4

THE AIR ARMAMENT INDUSTRY IN GERMANY

An air force of world significance presupposes an air armament industry that is quantitatively and qualitatively superior to that of most other nations. The mutual interdependence upon tactics and technology bears more heavily upon the air armament industry than upon other branches of the service. Air leaders have to recognize this as those in Germany did prior to the announcement of the new service law in 1935.*

In early 1933 the top-level command of the Luftwaffe was still fairly amorphous. The air armament industry consisted of eight aircraft factories and five aircraft engine works, and by 1 April of that year there were seven more firms in the process of being developed. The Siebel Company (Halle), the Miag Company (Braunschweig), and the Chassis Works in Gotha were to build the He-46, the Gotha Chassis Works the He-45, the Ago Company (Aschersleben) and the Erla Company (Leipzig) the Ar-65, and the Dornier Company (Weimar) the Do-11.

At this time the airframe industry had a serious shortage of skilled workers, and engineer personnel were at a premium. This was probably a result of the restrictions on military designing and development in the aircraft field because of the Versailles Treaty, which effectively kept younger men from becoming interested in aviation engineering. Thus, as long as this shortage persisted, the few officers with advanced technical training were tied down in jobs with urgently practical applications.

In 1933 there were no large-scale production facilities available in Germany. Most of the aircraft factories had to struggle along with inadequate purchase and contract orders, so that they normally manufactured individual aircraft rather than an entire series. These plants, served by only two metallic construction firms, became known as "blacksmith shops." The remainder of the companies functioned as small-scale manufacturers of diversified products. Engine and equipment firms were no more

* This section is based largely on studies prepared by Generalingenieurs Hertel, Huebner, Haase-Berton, and Bauer, and by General der Flakartillerie (Ret.) Otto von Renz.

than subsidiaries of the aircraft factories. Despite these handicaps, however, the German aircraft industry produced a great many more aircraft in 1933 than it had in the previous years, even if these models were admittedly inferior to those of many other nations at the time.

One cannot overestimate the value of the experiences gained during this period with respect to construction, the economical execution of series production orders, the development of production aids (standardization of equipment, blueprints, cast-metal models), and sub-contracting procedures. Raw materials research had brought results which enabled the Reich, poor as it was in terms of many of these goods, to make a start in the direction of mass production. Furthermore, the firm Production Ltd. and the Junkers Company had introduced a production method which was to prove of decisive significance to the Reich.

With the establishment of the Reichs Aviation Ministry, all of the technical agencies were consolidated under the Technical Office. Its first Chief was Col. Wilhelm Wimmer, who was in charge of the consolidation operation. The Office was organized in accordance with the horizontal pattern which meant that research and development (under the leadership of Lt. Col. Wolfram Freiherr von Richthofen) was kept separate from procurement (under Major Fritz Loeb), each department being independent of the other. The Office Chief was in direct command of all testing, while the approval of new equipment for release to the troops was the responsibility of construction supervision specialists.*

The immediate task of the air armament industry was to provide the necessary equipment for initial issue to the schools and flying units and to begin stockpiling the replacement equipment to make up losses due to wear and tear, obsolescence, and enemy activity in the event of war.

* Construction supervision specialists (Bau-Aufsichten), from 1933 to 1938 subordinate to the Construction Supervision Chief, were outside the province of officers involved with testing and procurement. The business and financial aspects, including checking and approving of prices, was handled by the Economic Group (Wirtschaftsgruppe) of the Administration Office.

The requirements set up by the General Staff were elaborated by the Planning Group of the Technical Office under the direction of Engineer Guenther Tschersich. This Group was concerned with a number of categories of activity, including those related to the designing and construction of airframes, propellers, airfields, gunnery ranges, engines, aircraft engines, airborne instruments and safety equipment such as parachutes, flares, pneumatic rafts, etc., armaments and bomb sights, and all sorts of ground service equipment.

Available facilities had to be considerably expanded or new plants established. Fortunately--this was largely due to Goering's influence upon Hitler, which was then extremely great--money was not a problem in the first stage of Luftwaffe development. The location and construction of new plants were determined by a number of factors. Only in exceptional cases were factories permitted to be in the vicinity of the border, and even then the firms concerned had to construct alternate establishments in less endangered areas. In order to satisfy the best interests of air defense the Luftwaffe High Command attempted to place industrial plants in areas that were not vulnerable to attack, and, especially to avoid congested areas. This was not easy to accomplish in many cases, since it often contradicted the best interests of economy. Once it was established, the Central Office for Construction Planning (under Minister Hans Kehrl) proved to be a big boon to the Luftwaffe's air armament industry.

Industrial plant elements had to be dispersed whenever possible -- no building could be larger than 64,560 square feet, and each had to be separated from the next by a distance equivalent to two buildings of this size -- and had to be adapted to the characteristics of the terrain. Air raid shelters had to be provided.

Other important factors in the development of the German air armament industry were the availability of a requisite force of skilled and unskilled workers, adequate transportation facilities for both workers and materials, and sufficient amounts of electrical power, coal, gas, and water. Because time was of the essence, production was begun even before the construction of the industrial plants had been completed.

Industrial facilities were to be planned in such a way that they took as little land and as few workers as possible away from

agriculture and the food-processing industries, and a sharp lookout was to be maintained to see that Communist or pro-Communist infiltration was kept to a minimum at such plants. Because of this principle, important aircraft parts sometimes had to be manufactured in three different plants, each located far from the others. By 1939 Germany had at her disposal a fairly broad foundation of air armament production facilities, organized from the mother plants on a trust pattern.

Raw Material Problems

In connection with its rearmament effort, the German Reich was confronted with a bottleneck as far as copper, molybdenum, tungsten, manganese, zinc, tin, rubber, fuel, and some other raw materials were concerned. This was also true to a lesser degree with the production of aluminum, which was restricted by a shortage of bauxite, even though in 1937 Germany led the world in the production of aluminum.

Germany had no restrictive regulations which could have been helpful in avoiding poor planning and a dissipation of her resources by utilizing them for purposes other than the armament industry. Moreover, her critical foreign exchange situation did not allow any considerable increase in the amounts of raw materials which she could acquire. The Military Economics Planning Staff, which should have taken over this job, was reduced in its effectiveness by the German officer corps' total lack of understanding of economic problems. Thus, the Staff operated primarily as a statistical office rather than as a fundamental guiding agency. Reichs War Minister Werner von Blomberg lacked the talent and resolution to make an issue of the matter and to bring it up at Cabinet level, while Generalmajor Georg Thomas, Chief of the Military Economics Planning Staff, possessed neither the status nor the personality (and perhaps not the ability) to stand up to the united front presented by the Wehrmacht, the Ministry of Economics (Wehrwirtschaftsministerium), and German industry.*

* Editor's Note: Thomas apparently did not enjoy the confidence of the High Command, with the exception of Goering. Field Marshal Wilhelm Keitel described him in early 1941 as a person who was generally "trusted by the Reichsmarschall, but in his other activities and assignments was unbearable." Keitel also mentioned that he "tends toward pessimistic judgments." See biographical section in the rear of this study.

Goering, in whose field of activity the entire matter fell, was one of the parties most concerned by virtue of his position as head of the Luftwaffe, but he was hardly the man to devote himself to the routine work so necessary for the achievement of results. In this situation it was precisely unrelenting routine work that was required.

Germany finally succeeded in building up a small reserve of the most vital materials. In the long run, however, these stocks were ridiculously inadequate, especially in the event of a war. Hitler had not informed his military leaders of a possible date when war might be expected, and, in complete disregard of the revolutionary and explosive character of his political moves, in spite of the surprises he had brought about thus far, and in spite of the indications laid down in his Mein Kampf, German military leaders were convinced in 1938 that there would be no war until 1943 at the earliest.¹ To be more accurate, military leaders were reluctant to come to grips with the problems which confronted them and with the frightening potentialities of these problems, to consider the sudden dangers in Hitler's policies and to think them through to the logical conclusion. If Germany's leaders had faced the possibility of war coming as early as 1940, then presumably raw materials would have been better husbanded and used more discriminatingly for projects of military importance rather than for splendid Party or Wehrmacht offices, art museums, and theaters.* The Four Year Plan would surely have begun prior to 1936, and its administrators would have taken a much firmer position toward the frequently recalcitrant German industry and would have compelled it to take more adequate air security measures. In this connection the phrase "too late" hits the nail squarely on the head.

The Four Year Plan came into existence on 16 October 1936. It was designed to make the German economy, particularly the agrarian economy, able to withstand any possible crisis, and to help Germany to become as self-sufficient as possible in case of war and blockades. It also envisioned a considerable increase in coal production, the exploitation of ore deposits which had hitherto been regarded as inaccessible or were not economical

*Editor's Note: Some of the barracks (Kasernen), especially air base installations, were constructed in particularly beautiful and elaborate styles. These became the envy of some of the ground forces. See figures 25 and 26.

to mine (such as those at the Hermann Goering Works at Salzgitter), and the acceleration of construction schedules for hydrogenation plants, aluminum production facilities, and plastics factories. The Four Year Plan did not have a chance to take effect prior to the outbreak of the war.

The raw material shortage began to make itself felt in the beginning of 1937, when, on 4 January, a plan for the peacetime mobilization of industry was finally drawn up. Supplies of aluminum were entirely inadequate for the requirements of the project, and iron and steel allotments were cut by 60 percent. By 1937 the backlog of iron and steel orders amounted to 117,000 tons. Aircraft production (Me-109, Me-110, Do-17-F, He-111, Ju-86, Ju-87, Fw-56, Fw-58, Do-18, and W-34) which scheduled the completion of 9,800 aircraft by 1 April 1938, actually produced only 4,800, 2,000 of which really belonged to the previous delivery goal. In order to maintain the scheduled strength of the units already in existence, manufacturers had no choice but to delay the mass production of the Ju-88.* The conversion to new models, scheduled for 1 April 1938, had to be postponed for a full year.

The rational functioning of the various factories was seriously jeopardized by the constant modifications requested from above and by the Technical Office, and by the necessity of helping each other out with raw materials during acute shortages. As a result of the curtailment of materials in 1933, the Miag, Heinkel, Dornier plant in Wismar, and other firms were forced to discharge large numbers of employees, including skilled workmen.²

The planned expansion of the air armament industry gradually bogged down. Important installations such as altitude test chambers were first postponed and then given up altogether. The same applied to certain airfields and billets. As a result, the Quartermaster General of the Luftwaffe found it necessary on 4 June 1937 to make the following report of curtailments to the Chief of the Luftwaffe General Staff:

The annual allocation of iron had to be reduced from 290,000 to 180,000 tons, 48,000 of which had

* The plants producing the Ju-87 and Do-17 were also not working up to full capacity.

been earmarked for the expansion of production facilities. The allotment of 63,000 tons per year for artillery pieces was reduced to 30,000 tons, resulting in a bottleneck in the vital conversion from machine-guns to 2 cm. flak artillery pieces. Instead of 80,000 tons per year, only 41,000 could be spared for flak artillery ammunition, and, instead of 18,000 tons for bombs per year, only 2,000 was allocated. . . . The allotment for motor vehicle production was curtailed from 47,000 tons per annum to 22,000 tons, thereby reducing the flak artillery batteries to a state of immobility. Twenty three medium aircraft fuel columns had to be disbanded, a dangerous omen with respect to the refueling of airfields not equipped with railway spurs or underground tanks.³

As early as 30 October 1937 Milch was forced to report to Goering that the production goal of 21,800 aircraft by 1942 could be met only as far as 75 percent, and that only 25 percent of the flak artillery production goals could be met. For the civil air defense program there was simply no more iron available. All of these problems were to have been mitigated by the Four Year Plan, which began a year earlier.

In 1937, Goering, acting in his capacity as Chief of the Four Year Plan, delegated fairly comprehensive authority to General Udet, Chief of the Technical Office, to initiate measures independent of existing regulations and restrictions in a number of fields. He was thus empowered to issue instructions to the Ministry of Labor (Arbeitsministerium) requiring the labor force still available in the Reich and (later) in Austria to be primarily assigned to the air armament industry. In conjunction with the Ministry of Economics he could temporarily restrict the export of machine tools, ball bearings, and other essential products, and could accept far-reaching financial commitments, even those above and beyond the established budget for 1938-39.

Besides all of this, Udet was empowered to order the Ministry of Economics and its subordinate supervisory agencies to provide raw materials and semi-finished materials in accordance with the demands of the Military Economics Planning Staff, if necessary by temporarily restricting exportation and by curtailing the allotment of civilian projects.

Despite a number of difficulties, so much had been accomplished in the air armament industry by the outbreak of war that General Georg Thomas, Chief of the Military Economics Planning Staff, was able to state in a report before the Foreign Office representatives on 24 May 1939:

...out of the few factories permitted by the Versailles Treaty has grown the mightiest air armament industry which exists in the world today. It has risen to achievements that not only compare with Germany's accomplishments during the war, but which, in many cases, even surpass them. Germany's production of crude steel, after that of America, is today the greatest in the world, her aluminum production far exceeds that of America and of the rest of the world. The output of our rifle, machine gun, and artillery arms factories is at present larger than that of any other nation.⁴

Unfortunately for the Wehrmacht, this record performance of peacetime could not be maintained during the war.

Aviation Fuel*

Since Germany's own oil production was negligible, the petroleum supplies required for air units had to be imported. The hydrogenation of bituminous coal was unknown in 1934, although the Leuna Works (an ammonia plant) in Merseburg produced approximately 200,000 tons of fuel per year by the hydrogenation of soft coal (lignite).

As far as aircraft engines were concerned, German aviation leaders had to be content with unleaded gasoline (without the addition of lead tetra-ethyl). The problem of the construction of production centers for synthetic aircraft fuels -- this was a long-range project at best -- remained in the future until 1935. Satisfactory lubricating oils for aircraft engines were developed only after long and painstaking cooperative efforts between the Technical Office and the various private firms.

Importation became increasingly the only acceptable method

* From April 1934 on, aircraft fuels were handled by special groups within the Technical Office (Groups II and III).

of meeting current needs and establishing reserve stocks. This, in turn, required the availability of considerable storage and transport capacity. The construction of the necessary facilities began in September 1934. In the middle of May 1935, a beginning could be made in building storage plants at Derben, Nienburg, and Stassfurt.* By 1942 large storage tanks with a capacity for approximately 26,248,000 cubic feet of aviation gasoline and 3,884,100 cubic feet of lubricants had been built. These were exemplary in every respect, were well concealed, and were easily accessible and simple in operation. Fuel storage tanks with a capacity of 390,000 gallons of leaded aviation gasoline were also erected at the airfields themselves. The chemical inspection of these tanks and the fuels contained in them was the responsibility of the Aircraft Fuels Group (Flugbetriebsstoff-Gruppe) in the Technical Office.

In 1938 the Reichs Aviation Ministry found it necessary to withdraw responsibility for the expansion of home production from the Four Year Plan administration, which had failed to achieve any noticeable progress. The project was then placed under the direct command of the State Secretary. Petroleum exploration, despite test drilling down to depths between 9,840 and 13,120 feet, had failed to produce results. This made the hydrogenation of both bituminous and soft coal an absolute necessity.

In order to supplement the facilities of the Leuna (Hydrogenation) Works the Reichs Aviation Ministry persuaded the I. G. Farben concern to open two subsidiary plants, one in Boehlen near Leipzig, and the other in the vicinity of Magdeburg, each having an annual production of 80,000 to 100,000 tons. The plant near Ruhland (Lausitz) produced only automotive gasoline, which was too low in octane for aviation use. By 1940, these gasoline plants had been augmented by two bituminous coal hydrogenation plants, Hibernia near Scholven, and the Gasoline Works at Gelsenberg north of Essen, by a soft coal hydrogenation plant at Zeitz near Gera, and by a plant in Poelitz north of Stettin, where synthetic petroleum was produced.

* The original capacity of these tanks amounted to 2,648,250 cubic feet, which was later increased to 3,531,000 cubic feet. Those tanks for lubricants were originally 35,310 cubic feet and later 61,558 cubic feet.

Imported lead tetra-ethyl fluid was insufficient for the requirements of mobilization. After long and complicated negotiations, the American Ethyl Gas Corporation agreed to build a plant in Doeberitz. This installation, which was ready during the winter of 1936-37, was a beginning at least, and even though its production was adequate to provide lead for only 40 percent of Germany's gasoline, it helped to meet the needs of mobilization. A second large ethyl plant was constructed at Nachterstedt near Oschersleben, but only after many difficulties caused by the Farben people had been mastered. This plant started to produce in 1939.

Despite the fact that the allotment of lead remained a serious problem until the end of the war, there was never any shortage of lead tetra-ethyl fluid. Ethylene dibromide (produced by the I. G. Farben Works in Oppau near the eastern border) made up some 45 percent of the total product. Plans were made to transfer the plant to Skoppau in the event of hostilities. Chromium, another very important material, was provided by the German Potash Syndicate (Kali-Syndikat) at the request of the Reichs Aviation Ministry.

In 1939 the German Luftwaffe had a reserve of 400,000 tons of aviation gasoline, augmented by 20,000 tons per month from German production facilities, 9,000 tons per month imported from Rumania, and in 1940 by the capture of a cache of 200,000 tons of enemy aviation gasoline. From 1942 on, thanks to the increased output of the hydrogenation plants, Germany's production climbed to 120,000 tons per month.*⁵

Aircraft Design and Procurement

Until World War II it had been recognized that four years were required from the time an original design was drawn up and

* General der Flieger (Ret.) von Seidel, Quartermaster General of the Luftwaffe, commented during a lecture in 1949, "Our demands that a reserve supply of aviation gasoline adequate for six months (approximately 600,000 tons) be set up...were ridiculed as 'exaggerated.'" See p. 29 of von Seidel's lecture, Karlsruhe Document Collection.

submitted until it was approved for mass production. Aircraft engines in Germany required even longer, sometimes as much as seven years. One year was required for the design and construction of the sample aircraft, one year for testing, one year for the preliminary production series, and one year for mass production, preparations for which had to have been made in the preceding two years. Under pressure of the supposedly necessary rearmament pace, German air leaders had no choice but to arbitrarily shorten the developmental period in order to speed up the production of the aircraft concerned. An effort was made to save a year by starting production before the results of the tests had been evaluated. This saving of a year was a serious mistake, for the mass-produced planes from this accelerated program proved to be unready for introduction at troop level. Correcting the many defects required the expenditure of more time and labor than would have been the case had the original plan been maintained.

Besides this, the speeded up program resulted in a bogging down of the entire production process and led to endless friction between designers, producers, and the Reichs Aviation Ministry, so that the year saved was really a year lost. This is precisely what occurred in the case of the Ju-88 and the Ju-86, and with most aircraft brought out during the war. Even more serious was the fact that some models had to be temporarily withdrawn from service or dropped completely shortly before or shortly after their first test flight because of irreparable defects. This wasted millions of development work hours which could have been profitably expended upon such worthwhile projects as diving performances, pressurized cabins, remote-controlled weapons and weapon systems -- all matters of great technological complexity. In some cases faulty design and the need for subsequent modifications were due to the inaccurate statement of military requirements, often the result of a tendency on the part of the engineers to overrate the potentialities of technology. Nevertheless, the Luftwaffe General Staff has been often accused of neglecting its responsibilities after 1939 with respect to the formulation of tactical and technological requirements.⁶

The fact that individual aircraft firms (often acting upon their own initiative) worked on too many different aircraft models at the same time served to dissipate the industry's resources and to overburden production facilities. The Heinkel firm, which is a perfect illustration of this sort of thing,

developed or tested between 1933 and 1939 the He-74, He-111, He-112, He-115 (250 of which were finally produced), He-116 (the model used by Lufthansa), He-118, He-119, He-176 (the world's first rocket powered aircraft, 1939), He-178 (with the world's first jet engine, August 1939), and the He-100.*

In establishing deadline schedules German aviation leaders often forgot that frequently a larger number of engineering work hours was needed for initial production, including the correction of defects revealed in the first test flights, and for further development, which included the modification of equipment to comply with the latest technological advances, than for bringing equipment to the initial testing stage. Examples of this are the development of the Me-109 and the He-111.

That so many defects and fiascos were possible in spite of the devoted work by all concerned was surely due to the lack of experience of the Luftwaffe General Staff and the Inspectorates, which were in the process of organization and did not have experienced planning staffs. It was also due to the excessively heavy work load of the Technical Office. With the change in chiefs in 1936, General Wimmer was replaced as Chief of the Technical Office by Generaloberst Ernst Udet, and the officers in charge of the individual branches were replaced by engineers. It is possible that the latter may not have been fully qualified for their jobs or that Udet could not supervise them properly. In any case, the results were unsatisfactory.

The Luftwaffe did not make a start in developmental planning until 1940, and the statistical material and information regarding the operational capacity of the individual development firms (so necessary for effective preliminary planning) were not made available until 1941. In order to collect and examine these materials it was necessary to utilize engineer personnel from the firms themselves.

It was unfortunate, but true, that the industry was more

* The He-100 achieved a record speed of 393 miles per hour over a 62 mile flight on 5 June 1938, and of 463 miles per hour over the same distance in March of 1939.

powerfully motivated by the ideas of competition and personal gain than by that of cooperation. The practices of reporting higher capacities than actually existed, of promising early deadlines for test model aircraft, and of promising to begin initial and mass production at unrealistically early dates, were not in keeping with the better traditions and ethics of the business world.

Flight testing was early augmented by the work of Lufthansa. The State Secretary, who had come to the Luftwaffe from Lufthansa, then acted as a middleman between the civil aviation enterprises and the Luftwaffe. The technical supervision of Lufthansa rested with Generalmajor Karl-August Freiherr von Gablenz, while its business interests were represented by Director Ernst Lutz.

After 1933, the testing stations, such as that at Rechlin, became more and more important. Rechlin, for example, with its greatly enlarged physical plant and its increases in personnel and equipment, gradually assumed the proportions of a county rather than a community. It had two airfields, extensive bombing and gunnery ranges, engine test beds, etc. For the naval air units, Tarnowitz and Travemuende (the former with an island base projecting into the sea and ideal gunnery ranges) remained the most important test centers. Peenemuende, originally built by the Luftwaffe, was utilized for the building and testing of the V-weapons.* Diepensee was the site of a tactical experimental station.

In the beginning these stations were directly subordinate to the Technical Office, but in 1941, in order to avoid duplication at the various establishments, the office of Commander of Testing Stations (Kommandeur der Erprobungsstellen) was set up under Col. Edgar Petersen. The question of whether testing stations ought to be commanded by officers or by engineers was largely one of personality. The chiefs had been able to stand up for their views to the Technical Office, to parallel agencies (industry), and to subordinate agencies (engineer and pilot personnel assigned to the stations). They needed not only an intuitive understanding of the most complicated technological processes, but also the highly developed technical instincts of the experienced pilot. If they were engineers, they had to be familiar with the potentials of aircraft and with the prevailing conditions in all anticipated areas of operation, and if they

* The development of the V-1 was a Luftwaffe project, but a part of the Peenemuende station was under the command of the German Army Ordnance Office.

were officers, they had to possess a fundamental knowledge of technology and have a marked talent for organization. Sometimes the Commander of Testing Sections set up special testing sections for specific projects.* The entire testing program was hampered during the war, however, when the Luftwaffe Training Division was committed at the front, removing a number of the most experienced personnel from the testing activity.

Agencies concerned with basic and specialized research/ forwarded their findings to industry and to the Reichs Aviation Ministry. The industry was then responsible for development, construction of test models, and preliminary testing, depending upon the desires of the industrial firm concerned. The testing stations intervened either at this point, working with industrial representatives to iron out any defects as quickly as possible, or after the initial production had begun. All equipment declared ready for introduction by the testing stations and authorized by the Reichs Aviation Ministry was released for testing at the troop level. Aircraft from initial production, the manufacture of which had begun during the testing stage, were also assigned to the front, and any defects revealed there were reported to the Technical Office as were the subsequent corrections of those defects.

* This included the Experimental Section, Office of the Commander in Chief of the Luftwaffe (Versuchskommando ObdL), with its 1st, 2nd, and 3rd Squadrons, the 26th Testing Station (Erprobungskommando 26) an antitank testing squadron, the testing section at Karlshagen, the 41st Testing Section (forest protection), the balloon squadron at Werneuchen, used also to test Luftwaffe experimental weapons at Adlershof, the Experimental Unit for Transport Operations, the 4th Testing Section (fighters), the Kolb Testing Section (machine guns) at Fuerstenfeldbruck, the Nebel Special Duty Section at Offingen, and the Testing Center at Laupheim.

/ Independent development firms such as Horten, Focke, Ackgelis, Walter-Kassel, etc.

Aeronautical Research in Germany*

The aftermath of World War I and the terrible inflationary period of the twenties would have meant the death-knell for German scientific research activity if industry had not stepped in with generous contributions through the auspices of the Emergency Organization for German Science, which was founded in 1920.† The projects supported by this organization were all the more in need of assistance since the German government was unable to provide adequate financial aid for its 2,600 university and college research institutes, for the extensive Reichs Institutes of Applied Physics and Applied Chemistry, or for the Kaiser-Wilhelm Institute with its thirty-seven subdivisions.

In the field of aviation there were the German Experimental Institute for Aviation in Berlin and the Experimental Institute of Aeronautics in Goettingen, but the German aviation industry believed that these two were insufficient to meet the needs of the time. Industry therefore took the initiative and established a research institute of its own, but, in so doing it made the mistake of failing to allot it sufficient funds. The result was a duplication of efforts in research and a lack of clearly delineated programs.

The Reichs Aviation Ministry was well aware of the inadequacies of this system and in 1933 authorized the founding of the Association for Aviation Research, an organization which was redesignated on 25 June 1936 as the Lilienthal Society for Aviation Research. Its objectives, apart from the establishment of aviation research goals, the promotion of specialized research projects, and the advancement of the exchange of scientific information, lay primarily in the area of applied technology. In addition, the Society endeavored to establish and maintain contact with the aviation industry, with commercial air agencies, and with the authorities concerned with the administration of civilian aviation activities, to disseminate information on the latest technological advances in aviation,

* In the original manuscript this section was immediately preceded by a treatise on the development of flak artillery within the Army Ordnance Office.

† This was later renamed the German Research Association (Deutsche Forschungsgemeinschaft).

and to promote the education of a new generation of flying enthusiasts. More ambitious research undertakings were handled by the German Academy of Aviation Research, a group which maintained contact with aviation and allied scientific agencies.

In 1937 the German Experimental Institute for Aviation and the Experimental Institute of Aeronautics were consolidated in the German Experimental Institute of Aviation, whose branch organizations spread rapidly from Adlershof-Goettingen to Braunschweig. This became the central research institute for aviation, and entailed the following research fields: aerodynamics, stability of construction aircraft mechanics, naval aviation activities, construction materials research, engine research, manual procedures and thermodynamics, power plant mechanics, fuel research, airborne equipment and navigation, and electro-physics.

Goering backed the Institute with the full authority of his office, and it was financed to a large extent by the Reichs Aviation Ministry. Once established, the aviation industry made no further attempt to set up research centers of its own, although a good many of the industrial research centers were, in any case, closely allied through their directors with the official research agencies.

The Institute was handicapped by a shortage of qualified engineers (mainly because industry offered much higher salaries), as well as by the fact that Generaloberst Udet, Chief of Supply and Procurement, seemed to lack contacts among the leading personalities in the field of aviation research.* At the same time the aviation industry did not possess the required technical equipment for many undertakings, and it was not until 1941, for example, that the first large-scale wind tunnels became available.

The Office of Luftwaffe Supply and Procurement

The Luftwaffe established the Office of Supply and Procurement

* As shown by the behavior of Udet's Chief of Staff, Generalmajor (diploma engineer) August Ploch (not to be confused with General Hermann Plocher), toward designers and inventors visiting the Office of Supply and Procurement. Udet himself was inclined to be shy and suspicious.

on 1 November 1934 as a subsidiary agency of the Reichs Aviation Ministry and charged it with the responsibility for all supply activity. This office was directly subordinate to the State Secretary and remained in existence until 1936, when it was made a part of the newly established Luftwaffe Supply Office.

In 1936 and 1937 the Luftwaffe Supply Office was subordinate to the State Secretary, in 1938 it was transferred to the command of the Chief of Air Defense, and in 1939, together with the Technical Office and Department of Industry and Economics, to the Office of the Chief of Luftwaffe Supply and Procurement. This move gave the latter office exclusive control over the Luftwaffe technical field.*

The need for secrecy required the creation of an office for Luftwaffe supply and procurement outside the framework of the Ministry itself. The name Luftzeugmeister (Air Ordnance Chief), was coined from the Army's counterpart, the Feldzeugmeister (Field Ordnance Chief). This office was in charge of all supply and procurement.

Despite its subordinate status to the State Secretary, the Supply and Procurement Office received orders and instructions pertaining to the type and sequence of issue of troop supplies and the stockpiling of supplies for mobilization from the Quartermaster Group, Operations Branch, of the Air Command Office. Working closely with the Operations Branch, the Quartermaster Group was provided with the plans for unit activations, equipment, and station locations (together with geographical data) as well as the material it needed to prepare preliminary calculations regarding the initial issue of equipment, requirements to meet current needs and to establish adequate supply stocks. These calculations, used in drafting the tables of organization and equipment, served as a basis for the work of the Supply and Procurement Office. Close cooperation between these agencies was of the essence.

* In 1938 and 1939 the Office of the Chief of Luftwaffe Supply and Procurement was divided into Branch 1 (organization of supply), Branch 2 (aircraft and air equipment), Branch 3 (motor vehicles, etc.), and Branch 4 (flak).

In 1934 the Luftwaffe Administrative Office supervised the construction of the most diversified kinds of supply installations: supply and procurement offices, depots, aircraft parks, and ammunition depots. The following year, when Germany regained her military sovereignty and the Luftwaffe established its six Air Service Area Commands -- a supply and procurement group was established in each of these areas under a commander who acted simultaneously as quartermaster officer for the Air Service Area concerned -- the lower echelon organization came into being. Between 1934 and 1936, as long as there were only schools to be supplied, the work of the Supply and Procurement Office remained within reasonable bounds, but there was soon too much work to be done, so that some of the burden had to be delegated to subordinate units. These agencies, whose commanders were of high rank and great authority, were able to assume responsible control over the supply system. This, however, left the Supply and Procurement Office somewhat separated from its lower echelon operations. Since it was not deemed advisable to set up a special board for the supervision of these operations, it was decided at the highest level in the Luftwaffe to establish another office, the Office of Supply. The responsibilities and authority of the Chief of Supply and Procurement were distributed between the new Office of Supply and the Office of the Senior Quartermaster (Oberquartiermeister), which had developed out of the Quartermaster Group of the Air Command Office. The Chief of the Quartermaster Group had become Senior Quartermaster and therefore was directly subordinate to the Chief of the General Staff.

With its comprehensive activities in equipping the Luftwaffe and with its assumption of responsibility for supplying the flak artillery units, the Luftwaffe Supply Office soon developed into a miniature ministry, and by 1 February 1938 had reached its final state of development and was ready for integration into the newly established Office of the Chief of Luftwaffe Supply and Procurement. At this time the Senior Quartermaster was redesignated the Quartermaster General.

Until 1 April 1937 the organizational plans of the Luftwaffe called for the assignment of a quartermaster officer to each Air Service Area. The creation of Air Districts left this system unchanged. These quartermaster officers, who were in charge of the supply and procurement groups in their respective areas, came under the command of the airfield area commanders, and administered the supply functions in accordance with orders and

requests submitted to them from units in the area.

The commanders of the airfield areas were responsible for all of the supply activity within their commands, with the exception of that of the ordnance administrative offices. In case of war, the units working in cooperation with the Army or Navy, or temporarily subordinate to them, were to be guided by special procedures.

At the outbreak of war in 1939, the Luftwaffe had 12 supply and procurement groups, 7 supply and procurement offices, 1 signal communications supply office, 14 aircraft parks (for land aircraft), 3 aircraft parks (for seaplanes), 3 flak parks, 2 Luftwaffe equipment turn-in stations, 48 ammunition depots, 14 fuel depots, and 1 gas processing plant. Besides these, and in addition to the regular supply columns which would have to be organized, there were to be 10 aircraft equipment issue stations (motorized) and 13 aircraft equipment issue stations (rail) available in the event of mobilization.

During the period of secrecy, the Chief of the Supply and Procurement Office was the superior officer for all supply installations. In conformity to orders issued by the Air Command Office and the Quartermaster Group, he arranged all supply activity in connection with Luftwaffe schools. Between 1 April 1935 and 1 February 1938 the Quartermaster General was responsible for maintaining a high state of operational readiness in the Luftwaffe, from the standpoint of personnel as well as materiel. This also applied to those Luftwaffe elements which were temporarily or permanently assigned to the Army or the Navy. His office was in charge of effecting a proper distribution of supplies among front units, schools, personnel replacement units, and newly activated organizations. It supervised ground organization installations and the expansion of those ground units. The Quartermaster General also had authority to order into action the rear area units of the Reichs Aviation Ministry and of the Commander in Chief of the Luftwaffe.

The Chief of Air Defense and his successor, the Chief of Luftwaffe Supply and Procurement, functioned as the superior headquarters of the Luftwaffe Supply Office in connection with equipping all Luftwaffe agencies, as well as with the matter of building up the required stocks of supplies. The Luftwaffe Supply Office, as the central clearing house for the Reichs Aviation Minister and the Commander in Chief of the Luftwaffe, presented

its requests for aircraft, weapons, ammunition, fuel, and equipment to the Technical Office and distributed these items to the various subordinate units for issue.

The Luftwaffe Administration Office (subordinate to the Chief of Air Defense) had charge of supply in the field of clothing and food, and worked through the Air Service Area Food Supply Officers with the Air District Food Supply Officers (Luftgauintendanten). The latter, under the command of the Commanders in Chief and their staff chiefs, were responsible for administering all procurement and distribution of food within the Air Districts.

The Luftwaffe Personnel Office (also subordinate to the Chief of Air Defense) was responsible for organizing and assigning personnel replacements in accord with the Luftwaffe Administration Office. Its channel of operation was through the Organization Branch (Officer and Enlisted Personnel) and the Quartermaster Branch of the particular Air Fleet to the Air District Command.

Air Districts functioned as centralized intermediate levels of command. They were authorized to issue orders to local administrative agencies as well as to those local agencies concerned with technical matters.

Logistical services for Luftwaffe units attached to the Army and the Navy were handled by the Logistics Staff Officer (Sachbearbeiter fuer Versorgung) on the staff of the Luftwaffe General with the Office of the Commander in Chief of the Army and by the Senior Quartermaster on the staff of the Luftwaffe General with the Office of the Commander in Chief of the Navy, respectively.

Luftwaffe commanders assigned to the High Command of the Army were responsible for the logistical services for Luftwaffe units assigned permanently or temporarily to Army operational areas. In coordination with the appropriate Air District Commands (Quartermaster and Food Supply Branches) they supervised the issue of supplies, including food and clothing as well as equipment, to flak artillery and motor vehicle units. The issue of all other supplies was coordinated with the quartermaster officers of the individual Armies.

The Senior Quartermaster, who was able to draw on the Supply and Procurement Office (Naval Air Forces) and on the aircraft parks, administered the logistical support of Luftwaffe units which were either permanently or temporarily assigned to the Navy.

Production and maintenance firms delivered equipment (exclusive of such items as clothing, ammunition, fuel, and oxygen) to the Supply and Procurement Offices, which, in turn, distributed these items to the aircraft and flak artillery parks. Only in special instances did production firms make direct deliveries to the parks. Shipments by industry served to supplement and to increase the supply stocks at the ammunition depots. The main ammunition depots assembled flak ammunition (which was all delivered unassembled except for 2. cm. ammunition) and issued it ready for use to subordinate depots.

Aircraft fuel tank depots, fuel supply depots, and vehicle fuel supply depots were supplied either from large established depots or from the particular production firms.

The number and type of supply installations assigned to each Air District depended upon the size of the District, the number of units assigned, and the relative vulnerability of the site (nearness to the border, etc.) to enemy action. In keeping with the local situation supply and equipment points were set up at the intermediate level between the schools and the field units.⁷

Army Medical Supply Depots issued medical supplies to the Luftwaffe Medical Supply Branch Depots, and these, in turn, issued the requested items to the higher level medical using agencies.

The Supply of Field Units

In general the Quartermaster General or the Senior Quartermaster administered the supply of troop units. Aircraft were either ferried by the producing industry to the Supply and Procurement Offices or picked up by aircrews from those Offices. The Supply and Procurement Offices had the responsibility of preparing the aircraft for combat use by installing radio equipment, weapons, etc. Crews of these Offices flew all aircraft to the receiving units except in the case of extremely urgent requests. In an effort to keep to a minimum the special procedure

of having using units pick up their own aircraft the Luftwaffe assigned in 1939 Aircraft Ferry Groups (Flugzeug-Ueberfuehrungsgruppen) to the Supply and Procurement Groups. In 1942 an Aircraft Ferry Wing was distributed among the Supply and Procurement Groups located near the front areas, and proved to be able to master all difficulties which arose.

After the outbreak of war in September 1939, it also proved to be necessary to establish aircraft test areas behind the front lines in order to permit the testing of planes before release to line units. These areas were also used for the final assembling of aircraft. In the South, for example, lightweight aircraft were transported over the Alps by rail during periods of inclement weather, and were then assembled and tested under the supervision of the Air Fleet Chief Engineer at fields conveniently located south of the Alps. Partially or completely damaged aircraft were picked up by salvage columns working under the direction of the Air Fleet Chief Engineers. The evacuation of unused and unserviceable weapons and equipment and other materiel was carried out in accordance with procedures that were uniform for all areas.

Normal supply transport facilities were supplemented by motorized transport columns, motorized fuel columns, and horse-drawn transport columns, all consolidated under the special Transport Column Staffs in each area. In compliance with the mobilization plan a total of 12 of these staffs and 117 motorized Luftwaffe supply columns had been set up by late 1939.

The Selection of Aircraft in the Luftwaffe*

Luftwaffe leaders regarded the selection and production of

* Material contained in this section is based upon a brief study by General der Flieger (Ret.) Paul Deichmann, on a study by Generalingenieur (Ret.) Gerbert Huebner, "Der tatsaechliche Ablauf der Aufgabenstellung (Planung und Auswahl der Flugzeuge fuer die deutsche Luftwaffe)," (The Actual Course of the Mission: Planning and Selection of Aircraft for the German Air Force), and upon a study by General der Flieger (Ret.) Hellmuth Felmy, entitled "Kurze Angaben ueber die Geschichte des 4-mot. Bombers" (Brief Remarks on the History of the Four-Engine Bomber), and a second study by Felmy, "Wie Kam der Gedanke eines Schnellbombers auf?" (How did the Idea of a Fast Bomber come about?), Karlsruhe Document Collection.

various types of aircraft for the fighting forces as one of their major responsibilities. Consequently, it was imperative that the technical and tactical agencies of the Luftwaffe High Command should work closely together. In some cases it was even necessary to ascertain the political intentions and opinions of the heads of state in order to make decisions on aircraft. Obviously, the entire program could succeed only if all of the agencies concerned--military, government, and industry--accomplished their tasks with skill and conscientiousness, and no link in the chain could be allowed to fail if crucial mistakes were to be avoided.

Tactical and Technical Requirements of the General Staff

The General Staff, and particularly the Tactical and Technical Requirements Group (IT Group) within this organization, was responsible for determining the aircraft types required on the basis of the plans for the conduct of operations in the event of war. This was naturally dependent upon Germany's knowledge of the enemy and the resources available to him.

For determining the tactical and technical requirements of aircraft the General Staff could call upon the individual Inspectorates under its command.* Each of these was called in for consultation with respect to the aircraft type under its supervision, the 1st Inspectorate for reconnaissance aircraft, the 2nd for bombers (and after 1 February 1939 for dive-bombers as well), and the 3rd for fighters and dive-bombers (and after 1 February 1939 for fighters, ground-attack aircraft, and "destroyers"). As expert bodies directly concerned with the inspection of the flying units, these Inspectorates served as a link between the General Staff and the units in the field. In compliance with orders from the General Staff, they were responsible for recommending the tactical requirements necessary to enable the aircrews to accomplish their missions. The views of the Inspectorates on tactical and technical requirements were also important from the standpoint of training. These requirements could be extremely varied, and included items such as the number of crew members required for different types of missions, the supplementary equipment needed to make aircraft suitable for the assigned tasks, and the modifications necessitated by unusual

* See p. 63.

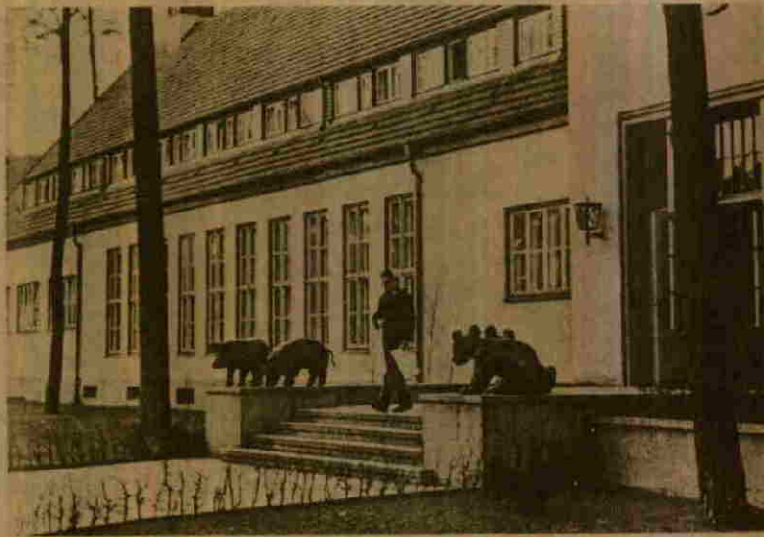


Figure 25

A typical modern barracks at a Luftwaffe base.

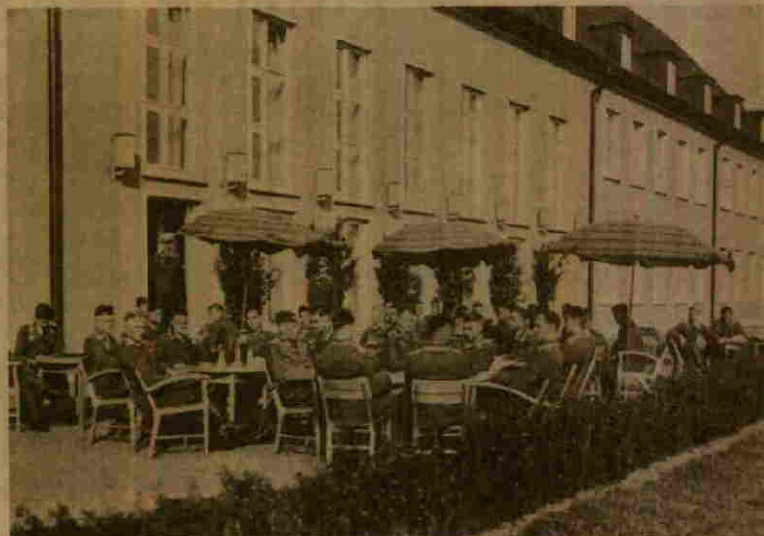


Figure 26

Luftwaffe personnel relaxing on the patio of a mess hall after luncheon.

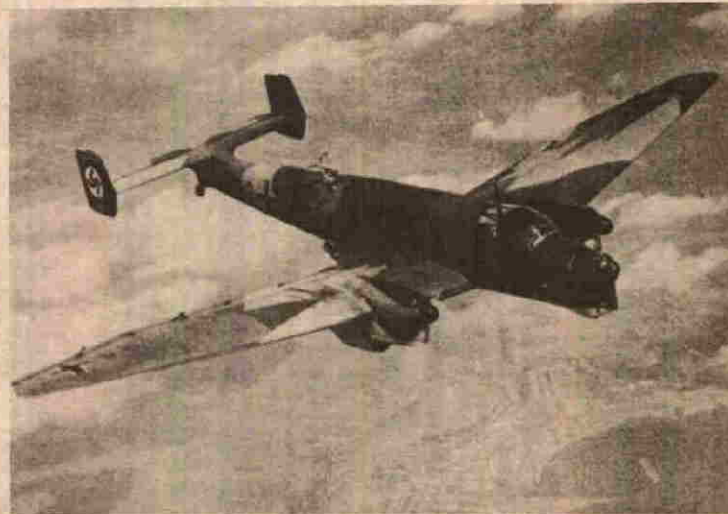


Figure 27

An early transport plane and Luftwaffe bomber, the Ju-86, which, with proper power plant modifications, might have been useful in World War II. As it was, it was obsolete by 1939.

conditions. All of these things had to be taken into account in the earliest stages of design.

Inspectorates had to maintain very close contact with the Technical Office and had to participate in the inspection of the various mock-up and model aircraft. This was not accomplished, however, without difficulty. Frequent personnel changes in key positions, the lack, at least in the early period, of qualified personnel in the field of bomber aircraft, and the tendency of the Commander in Chief of the Luftwaffe (who seemed to think that youth could do no wrong) to appoint excessively young officers without the necessary experience to important posts in the development program all hampered the work of the Inspectorates.

The Chief of the General Staff was kept constantly informed of developments in this field and was responsible for making the final determinations of tactical and technical requirements. Once approved by Goering -- this sometimes also involved the concurrence of the State Secretary -- they finally became effective and the plans could be put into action. Unpredictable changes in the political situation, however, including spur-of-the-moment decisions by either Hitler or Goering, often upset the plans.

The General Staff has been accused, partly from its inception⁸ and partly from the period since 1939,⁹ of having failed to provide effective guidelines or purposeful requirements for developmental activity, and it was precisely sensible guidelines which were most needed to meet the threat of war and to assure a smooth continuation of these programs in the course of a war.

The fourth Chief of the General Staff, Hans Jeschonnek, whose own knowledge in the technical field was obviously quite limited, had a technically well-versed consultant to assist him until the beginning of the war in the person of Capt. (GSC) Helmut Pohle. But, when Pohle, who had already been taken away from his job with the General Staff by his assignment as chief of the Ju-88 testing program at Rechlin, was shot down during an attack by his Ju-88 group on enemy naval targets at the mouth of the Tyne River on 16 October 1939, and was then taken prisoner by the British, the highly important IT Group fell into the hands of a group of youthful, inordinantly ambitious officers who were both inexperienced and inadequately controlled by Jeschonnek. The results were chaotic. According to General-richter (Ret.) Dr. Manfred Roeder:

. . . since 1939 neither the General Staff nor the IT Group bothered to submit concrete requirements for the technical performance of aircraft. Instead, they contented themselves with commonplaces, and Storp, the Chief of the IT Group, during his visits to the factories to inspect mock-ups of new aircraft models, paid a great deal more attention to external features such as crew comfort than to the technical data of the particular aircraft. It was Storp who ordered a minor change in the airframe of the mock-up of the JU-188* which delayed series production for several months.

Interrogation of the General Staff members revealed the incredible fact that there were no performance requirements for future aircraft models on file and that the Office of the Chief of Luftwaffe Supply and Procurement had not been provided with any data which could be used by the technical agencies to develop the technological requirements likely to be demanded of the aircraft then in the process of development for use by strategic Luftwaffe units in air operations.

The IT Group had furnished the Chief of Luftwaffe Supply and Procurement with only a single fundamental principle to work from, namely that the ideal to be striven for was the unification of all types of aircraft performance (fighter, bomber, and dive-bomber) in a single model, in order to reduce the total number of individual aircraft types. This requirement, surely unique in the history of technological development, was patently so unrealistic that Generalfeldmarschall von Richthofen, during the course of the investigation, felt constrained to declare, "Utter nonsense! Nature can't be deceived!"¹⁰

Soon after General Wever's death it became apparent that the Luftwaffe General Staff was neglecting to adjust its technological requirements to the anticipated operations of a potential war. In part this may have been due to the fact that the Wehrmacht High Command and the Army High Command consistently

* Editor's Note: An advanced design drawn from the Ju-88. This model did not get into series production until 1942.

refused to make any prognosis regarding the possible course of a war and advocated the view that in any case air armament would be able to adjust itself quickly to wartime conditions. It was by no means common knowledge, even among those who ought to have known, that the development of an aircraft from the planning stage to production took a minimum of two years.¹¹

The conditions described may be attributed in part to the deterioration of relationships between the leading personalities of the Luftwaffe which began to make itself felt soon after Wever's death on 3 June 1936, and which became more marked after General Wimmer's resignation from the Technical Office on 15 June 1936. Worst of all was the enmity which existed between Jeschonnek and State Secretary Milch.¹² Nor was Jeschonnek on a particularly amiable footing with the sensitive and suspicious Udet, Chief of the Luftwaffe Supply and Procurement Office.¹³ Milch had been extremely cool toward the Luftwaffe General Staff Chief since 1937, when the General Staff succeeded in changing its status so that it was no longer subordinate to Milch in his capacity as permanent deputy to the Commander in Chief of the Luftwaffe.¹⁴ At the same time his relationship with Udet, who was also directly subordinate to Goering, began to worsen. Goering, whose office placed him above all three of these men, seemed to be incapable of smoothing over the situation. Therefore, the urgently needed cooperation and integration of top-level agencies, a sine qua non for the achievement of the air armament program's goals, no longer existed.

Far graver than this, however, was the sin of omission on the part of the Luftwaffe General Staff which can best be explained by the provisional character of Germany's foreign policy at the time, a policy which declined to furnish top-level Wehrmacht agencies with specific (insofar as was possible) information concerning the government's plans and intentions for the future. Instead, the government tried to steer a course characterized by excessive optimism and a complete disregard of risks which should have been clearly apparent as it moved along the thin line between peace and war, seemingly as if the Wehrmacht was fully prepared to go into action immediately in case of the outbreak of hostilities.¹⁵ -

The Technical Office

The missions and duties of the Chief of the Technical Office were laid down in an order issued on 18 January 1938. This order

stipulated:

- 1) The Chief of the Technical Office is directly subordinate to the Reichs Aviation Minister and the Commander in Chief of the Luftwaffe.
- 2) In compliance with instructions issued by the Reichs Aviation Minister and the Commander in Chief of the Luftwaffe, the Chief of the Technical Office supervises the procurement of equipment and the industrial activity incidental to the armament program of the Luftwaffe.
- 3) In concurrence with research agencies, industry, and the Army Ordnance Office, the Chief of the Technical Office is in charge of research and development, particularly of aircraft and aircraft equipment and of testing.
- 4) On the basis of requirements reported to him, the Chief of the Technical Office procures the stocks of equipment and ammunition needed to take care of initial issue, current supply, and the establishment of a reserve for use in the event of war.

On the basis of requirements pertaining to supply during wartime, he supervises the expansion and the production capacity of the companies engaged in armament production for the Luftwaffe and, in coordination with the Military Economics Staff of the Wehrmacht, takes steps to insure the availability of personnel and raw materials required by industry in the event of war. He represents the interests of the Luftwaffe in connection with the allotment of materials and industrial facilities during conferences with other Wehrmacht agencies.

- 5) In accordance with instructions issued by the Reichs Aviation Minister and the Commander in Chief of the Luftwaffe, the Chief of the Technical Office supervises the production of Luftwaffe equipment by industry.¹⁶

The Technical Office was organized horizontally in that the

Development Branch and the Production Branch were on the same level. This form of organization was retained with very few modifications until 1938. Clearly separate areas of activity were in the hands of well-organized, expert staffs. Frequent discussions and exchanges of opinion could be had without the necessity of going through long and complicated channels. Those areas of activity which required constant coordination, such as fuselage and engine development, were combined under a single chief, who then established the necessary contacts between the sections dealing with testing and procurement.

The horizontal structure of the organization was abandoned on 1 February 1939 in favor of a vertical arrangement in which development and procurement were combined in the various major branches dealing with the different aircraft types. Under this new system one individual was responsible for each sort of equipment from development to mass production. This, of course, helped to relieve the burdens of the Chief of the Technical Office. The main disadvantage lay in the fact that the Chief now had to deal with thirteen separate, but mutually interdependent, groups instead of the four branches or groups under the old system. As a result it was no longer possible for him to maintain close contact with all aspects of operations of his office.

The procurement agencies (which were supposed to work with considerable independence and in accord with sound business principles) were organized into seven separate groups. There was no uniform direction of these groups, and the Economic Group in the Luftwaffe Administrative Office was not large enough to compensate for the disadvantages which this entailed. Thus, under the new system of organization it was quite possible that there might be no one in the Technical Office who was fully acquainted with all aspects of the work being done on a particular aircraft, such as, for example, the He-177.

Neither Udet, his Chief of Staff, Generalmajor August Ploch, nor his Chief Engineer, Generalingenieur Roluf Lucht, was capable of holding such an amorphous office together. Yet, the Technical Office was enlarged even more when the Office of Supply and Procurement was established on 1 February 1939. Research, development, testing, procurement, and business supervision were all placed under a single authority. This was an appealingly neat form of organization, but one which Udet, with his artistic temperament and lack of talent for routine work, was not equipped to handle. To make matters worse, his Chief

of Staff, Generalmajor Ploch, was even less fitted to command such an organization.

The old Technical Office, still under Udet's direct command, the new special groups, testing stations, and other organizations making up twenty two agencies, all fell within the jurisdiction of the Chief of Luftwaffe Supply and Procurement. This organization had nine more technical groups than it had before 1939. The disadvantages of the vertical form of organization were scarcely mitigated by the annexation of the Industry and Economics Department. When war came these disadvantages had not yet become apparent, and the initial victorious campaigns in Poland, Norway, and France gave the impression that everything was in reasonable order, but during the Battle of Britain they began to make themselves painfully felt. The repercussions of this played a significant role in Udet's subsequent suicide.

The Role Played by the Technical Office

Once the tactical and technological requirements for new equipment had been determined, the Technical Office took over and worked out the technological aspects of the largely tactical demands of the General Staff. For example, it might be necessary to disapprove the use of a recommended material or to order the use of another or to specify the aircraft engine models to be used. This preliminary work was followed by calling for bids on projects and awarding contracts to one or more production firms. Experience had shown that it was advisable to have at least two companies working on the development of each piece of equipment.

Germany's aircraft development program was seriously handicapped by the fact that she was far behind other nations in the development of aircraft engines. Prior to 1933 Germany had no choice but to get by as best it could with the few foreign engines (Napier "Lion," Bristol "Jupiter," and Pratt and Whitney "Hornet") she was able to import. The engine development program launched in 1930* had not yet reached the production stage. Both 30 liter and 20 liter engines, as well as two Diesel models, were in the process of development in 1933 and 1934, and two test models were constructed of each (30 liter engine - DB 600-601 and Junkers Jumo 211, and 20 liter engine - BMW 116 and Junkers Jumo 210). There were still a number of difficulties to be overcome before Germany could begin the licensed production of the

*See p. 23.

air-cooled "Hornet" as the BMW-123 and the Bristol "Jupiter" as the SA-22. This caused a great delay in the introduction of the air-cooled radial engine.

Because of this situation, the aircraft had to be designed so that obsolete engines could be later replaced by more modern ones, whose extra power would make it possible to achieve the performance standards which were originally specified. Sometimes aircraft had to be built on the basis of already existing models, provided that these came close to meeting the required performances.

Aircraft Production

Once the designs had been approved production firms constructed full-size wooden or cardboard mock-ups of the aircraft to allow checks on space layout, visibility conditions, and the accessibility of vital equipment. Representatives from all agencies concerned, as well as experienced pilots from the front, took part in these inspections.

After this had been done and the inspections evaluated, the Technical Office requested test models to be made of the particular aircraft. These were then tested by the firms which built them and, later, by the Reichs Aviation Ministry. When this had been completed a testing phase followed in Luftwaffe units, usually those of the Training Division. This final test determined whether the model ought to be introduced to front line units. Ordinarily this decision was made by the Commander in Chief of the Luftwaffe, after he had heard the views of the Technical Office and the General Staff and had seen demonstrations of the model in question. The same procedures were followed for aircraft engines and other equipment.

Both design and construction were under constant pressure to produce "as much as possible as quickly as possible." In these circumstances it was clear that the procurement of spare parts was sooner or later bound to lag behind. In vain did Luftwaffe leaders recommend that these parts be procured at the rate of 20 to 30 percent of the completed aircraft.

Unfortunately for the Luftwaffe, production was never rationalized nor was the operation of awarding of contracts to the various firms or the exchanging of experiences and opinions

between the several firms. Company managers displayed unusual skill in acquiring contracts from the Reichs Aviation Ministry, a skill they continued to utilize to the fullest, even when their firms had no more production capacity available. The Heinkel and Messerschmitt companies, for example, were active in greatly diversified fields, and were "over-extended" in the scope of their operations. By the end of the war Messerschmitt was building not only the single-engine fighters Me-109, Me-163, and Me-262, but also the twin-engine fighters Me-110, Me-210, and Me-410, as well as large capacity cargo gliders, the Me-321, the Me-323 (converted for use as a transport), and the Me-264 long range reconnaissance and bomber aircraft. Focke-Wulf, to mention a third firm of this sort, was building a night fighter, the Fw-154, the Fw-200 long-range bomber, the Fw-189 reconnaissance aircraft, the Fw-44 training plane, as well as the various versions of the Fw-190. The rest of the aircraft firms had much the same situation.

Three aircraft engine firms were carrying out parallel development work on three engines of equal power (DB-603, BMW-801, and the Jumo-213). How much better it would have been from the standpoint of increasing production and saving material and labor to have combined them! This would have simplified the supply, storage, and maintenance problems and would have allowed the assignment of all of the designers to a single project.

The frequent changes in the tactical and technological requirements made it impossible for the air armament industry to exploit its capabilities to the fullest extent. Equally unfavorable in its effect was the failure to discontinue work without delay on any item that had clearly failed to meet the specifications demanded of it. Instead, projects were allowed to go on, even though the results were bound to be patchwork at best. The Ju-288 for example, although obviously sub-standard, was not dropped from the program for four more years, during which time a large staff of designers and skilled technicians wasted vast supplies of valuable materials in the vain hope of improving it.

Aerial Torpedoes

It was shocking to think that after ten years of existence the Luftwaffe had no suitable aerial torpedo. Instead of assigning the development of this weapon to industry, the Reichs Aviation Ministry had turned this task over to the Experimental

Torpedo Institute (Torpedo-Versuchsanstalt) operated by the German Navy in Eckernfoerde. The Norwegian campaign brought to light the gross inadequacy in this field. The Institute had managed to seal itself off from the outside world so effectively that not even the Luftwaffe officials directly concerned with torpedo development were permitted to be present during the testing of German-made and foreign-made torpedoes. The Norwegian "Horten" torpedo (LTF 5b), a few of which had been delivered as early as 1934 and 1935 but which were not tested until 1938 (in Travemuende), turned out to be a complete dud. Better results were obtained with Italian torpedos (LTF 5w, manufactured under license and based on the Whitehead torpedo, and the S.I. torpedo built by Silurificio Italiano), which were tested at a flight altitude of 328 feet and a speed of 210 miles per hour.

In order to keep its inefficiency and blundering from becoming public, the Experimental Torpedo Institute established greatly exaggerated security measures, even with respect to sister branches of the Wehrmacht. Neither the commanders of naval air units, Generals Joachim Coeler and Martin Harlinghausen, nor Generalingenieur Ernst Marquardt had been able to elicit any information of significance.

The Experimental Barrage Command, on the other hand, achieved highly satisfactory results in the development of aerial mines. The work on this weapon was handled on the same basis as the development of the submarine mines.

Introducing Aircraft at Troop Level

The introduction of aircraft at the troop level was hardly handled in a manner conducive to serving the best interests of the Luftwaffe. From the beginning any decisions in this area made by Luftwaffe leaders were powerfully influenced by political factors. Fear of Allied interference in the German rearmament program made it impossible to establish a truly comprehensive training program for flying personnel from the outset and to accomplish the painstaking and time-consuming developmental work needed for aircraft to meet high performance standards. All of this would have taken more time than German government leaders (working under the pressure of an anticipated Allied intervention) were willing to grant. What they wanted was the rapid activation of units which, to the outside world, would appear to be capable of striking a powerful and telling blow. It seemed to be irrelevant to them that these units had to get by with obsolete equipment.

The main thing was to make it clear to any potential enemy as soon as possible that he would be taking a grave risk to tangle with Germany.

It lay in the nature of the situation that these units could only be activated by utilizing the military aircraft which were already available or by adapting commercial aircraft for use as bombers. This was a stopgap measure, and it meant that the greater part of the initial aircraft issued to the newly-formed units were already obsolete and would presumably have to be scrapped within the very near future. During the summer of 1935 Goering openly and cynically admitted to some of his friends that he would have no objections if the entire production of 1933, 1934, and 1935 were simply consigned to the trash heap after Germany announced its military sovereignty. The main thing from his point of view was that enough aircraft should be produced to force industry to expand its capacity and -- this was no less important -- "to impress Hitler and to enable Hitler, in turn, to impress the world."¹⁷

During the first phase of events (1934 to 1936) the Luftwaffe's units were activated in rapid succession and equipped with military aircraft previously developed by the Reichs War Ministry or with commercial aircraft outfitted with makeshift weapons. Developments made during the period of secrecy prior to 1933, which were tested in Lipetsk, were available, but these were advanced very little beyond the 1918 types and were of little combat value.

The second phase (1936 to 1938) was dominated by the objective of equipping the new air force with aircraft models which could be expected to be a match for those of any potential enemies. The developmental work on most of these models had either begun within the framework of military or civilian programs, or could be initiated without delay with the help of other nations. It was during this period that the medium bombers, the Do-17, the He-111, and the Ju-86 came out.* The Ju-86 (the first all-metal aircraft made with non-corrugated metal) had excellent flight characteristics, but was equipped with an engine (Ju-205 Diesel) that caused endless troubles. Because of inadequate testing of these engines, the aircraft had to be withdrawn from line units in 1937, and left the Junkers firm no choice but to scrap the pre-cut parts already on hand, enough for 1,000 aircraft. It might have been retained as a training aircraft, but, instead, the Ju-52 (an all-aluminum aircraft) was

* See figure 27.

used for this purpose. Aluminum was even then critically scarce and the Ju-52's three engines consumed more fuel than the Ju-86 would have if outfitted with moderate-sized gasoline engines.

The Luftwaffe provided in its Rhineland Program of 1935 that bomber units should be equipped with the Do-17, the Ju-86, and the He-111. Prior to this plans had been made in the Technical Office to replace the first two of these by the He-111.

It was also during the second phase of air armament that the Ju-87 "Stuka," which became so famous as a dive-bomber, was introduced. This was inspired by Udet's visit to the United States and his favorable impression of the Curtiss "Hawk's" low-altitude dive-bombing performance. After purchasing two of these planes and demonstrating them before a number of military observers, the Luftwaffe accepted the dive-bombing idea and selected the Curtiss aircraft as the model for this type of plane. The first aircraft of this sort developed in Germany was the He-123, followed soon thereafter by the Junkers Ju-87,* a two-place, low wing aircraft with a 30 liter engine. This was first introduced in 1937 (141 aircraft) and maintained its place throughout World War II with very few modifications.†

Among German fighters, the predominant aircraft before 1936 was the He-51, a biplane which was employed in Spain as a fighter and, later in the war, as a bomber. Its speed was only 185 miles an hour, not appreciably more than that of the Arado-68. During the second phase of the air armament program the Me-(Bf) 109, the classic fighter of the Luftwaffe, made its appearance. It was selected by Udet over its closest competitor, the He-112, because of its speed, climbing ability, and general performance.

* Both the Arado and Heinkel firms had been asked to submit plans for a dive-bomber, but neither the Ar-81 nor the He-118 was able to meet the specified standards. Only the Junkers Ju-87 proved to have the necessary diving capability. See figure 28.

† Editor's Note: Between 1939 and the end of 1944, 4,881 Ju-87's were produced. Nevertheless, except in the East, this aircraft could scarcely carry out its mission without fighter escort after 1940. The Battle of Britain indicated how obsolete it was when used against a competent air force.

Fighter pilots of World War I (with the exception of Udet) were dead set against it from the beginning because of its unusually high wing loading and poor banking capabilities. It became the main fighter of the German Air Force in World War II and was used for bomber and reconnaissance work as well.*

The Me-110, selected for development in 1935, was designed as a top performance twin-engine fighter and long-range fighter.† It was equipped, however, with two Junkers Jumo-210-G engines, barely adequate to meet the requirements of a 1,200 mile flying radius, and its speed was thus a severe disappointment. The Me-110, whose top speed was 270 miles per hour, was obsolete as soon as it was produced.

The Do-17 was the only long-range reconnaissance aircraft of any importance. As far as tactical reconnaissance planes were concerned, there was the Hs-122 and the Hs-126 produced by the Henschel Company. The Hs-126 was an all-metal aircraft with a speed and flying range considerably in excess of that of the He-46. At the end of 1936 new tactical and technological requirements established by the General Staff opened the way for the development of the Fw-189.††

As previously mentioned, the development of the long range bomber requested by Major Wimmer (Chief of the Wa Pr 8 Office) as early as October or November 1932 (approved by General Wever, Chief of the Air Command Office, in the autumn of 1933) and again later by Wimmer when he became Chief of the Luftwaffe Technical Office, ended in a catastrophically wrong decision.** Four-Engine bombers were being developed by the Dornier Company (the Do-19) and the Junkers Works (Ju-89). The former was a cantilever design, high-wing aircraft, while the Ju-89 was the same

* A total of 30,573 Me-109's were produced, a greater number than that of any other fighter on either the Axis or Allied side.

† See figure 21.

†† Between 1939 and the end of 1940 a total of 846 of these were produced, some of them in the S.N.C.A. de Sud-Ouest plants in occupied France. See figure 29.

** See p.55. See also Richard Suchenwirth, Historical Turning Points in the German Air Force War Effort, USAF Historical Studies No. 189, Maxwell Air Force Base, Alabama: USAF Historical Division, ASI, June 1959, pp. 40-44.

type, but with retractable landing gear. In the beginning both were equipped with Bramo 322 engines, with a take-off horsepower of 715. The Luftwaffe planned to replace these with more powerful engines in time, since the flying radius was only 925 miles and the cruising speed was only 177 miles per hour with those power plants.

Wever included this four-engine bomber in his plans for strategic air operations, and gave it the name of "Ural Bomber," indicating the possible use for which it was intended. With more powerful engines it would no doubt have fulfilled its mission, and it could have been ready by the outbreak of war, two and a half years later. However, a group of engineers in the Technical Office managed to win over the State Secretary (and presumably Udet as well) to their way of thinking and secured a ban on its further development. The Chief of the General Staff did not object, and, in fact, is said to have suggested to Goering on 24 April 1937 that such development ought to be stopped.¹⁸ It is possible that the attitude of the Commander of the Training Wing, Lt. Col. Jeschonnek, may have had an influence upon the Chief of the General Staff. In any case, the efforts of the Chief of Branch 1 of the General Staff, Lt. Col. Paul Deichmann (who appealed directly to Goering to allow further development) were in vain.* The five sample aircraft already built were scrapped.

The difficulties encountered in obtaining raw material during the construction of the four-engine bomber could presumably have been resolved within the framework of the German economy. In the meantime, however, a new premise had been accepted, the idea of numbers rather than effectiveness in aircraft produced.¹⁹

The two aircraft firms entrusted with the development of the four-engine bomber were reluctant to drop the project. According to Generalingenieur (Ret.) Gottfried Reidenbach, the State Secretary himself ordered the scrapping of the sample Do-19's on the occasion of an inspection visit to the Dornier plant in Friedrichshafen.²⁰ The abandonment of this project had a

* See p. 55.

† See p. 56.

†† As reported to General der Flieger (Ret.) Paul Deichmann.

disastrous effect upon the Luftwaffe.

In the third phase of Luftwaffe air armament (1938-42) it was the objective of German leaders to provide aircraft which would be superior to those of its potential enemies. Two bomber models, the fast bomber which had been ordered by the General Staff in 1935 and the new long-range bomber,* as well as a dive-bomber with an increased radius of action were important developments during this period. Major Wolfram Freiherr von Richthofen, Chief of Branch II of the Technical Office under the Air Command Office since the spring of 1934, was an ardent champion of the superspeed bomber.²¹ Industrial firms too, particularly Junkers, were enthusiastic about it. This aircraft was supposed to have a speed of 300 miles per hour, a range of 1,500 miles, and to be able to carry a bomb load of 1,102.5 pounds. It was to have only one machine gun (for moral support) in its armament.

Models developed by the Bavarian Aircraft Works,† Messerschmitt, Henschel, and Dornier were dropped in December of 1937 in favor of the aircraft produced by the Junker Works, the Ju-88. In the meantime the General Staff requested that a new superspeed bomber be developed which could carry 4,410 pounds of bombs. The record flight of the Ju-88 in the spring of 1938 over a 1,200 mile course from Dessau to the Zugspitze and back showed a speed of 315 miles per hour, a speed which was later considerably reduced by a 30 percent increase in weight from the installation of a machine gun position, the dive brakes, and the storage racks for additional bombs.

Jeschonnek, disappointed by the horizontal high-level and low-level bombing demonstrations he had seen at Greifswald, determined to develop the Ju-88 as a dive-bomber so that it could

* We have no definitive answer to the question of whether this long-range bomber was requested by the General Staff or developed by the Technical Office on its own initiative. Likewise, the question of when this development was requested requires further clarification. It is possible that it was submitted in late autumn of 1937, subsequent to Jeschonnek's assumption of office. See Ernst Heinkel, Sturmische Leben (Stormy Life), Stuttgart: Mundus Verlag, 1953, p. 407.

† Editor's Note: Redesignated September 1938 as Messerschmitt A. G.

strike targets such as power plants with 100 percent accuracy, making it possible for the Luftwaffe to eliminate an enemy's sources of strength. In May and June of 1939 Capt. Pohle and a special testing group achieved good results with Ju-88's in an 80 degree dive at Rechlin-Roggenthien.²² Yet, the Ju-88 did not come up to expectations in every respect. Heinrich Koppenberg, General Director of the Junkers Works, was ordered on 3 September 1938 to begin series production of the Ju-88. The Sudeten crisis necessitated immediate action. Soon, however, a number of modifications had to be made, which slowed the speed of the aircraft and made it impossible for the Junkers firm to meet production schedules. By the outbreak of war there were far fewer Ju-88's than had been anticipated, and only 119 were produced in 1939.

The long-range bomber was to have a cruising speed of 310 miles per hour, an operational range of 3,000 miles, and a bomb load capacity of 2,205 pounds. Over distances of 1,200 miles it was supposed to carry 4,410 pounds of bombs. Originally, this was to have been a four-engine aircraft, but this was soon changed to a plan for a twin-engine bomber for which the Heinkel Company offered its He-119 as a possible solution, and the Junkers firm submitted the Ju-85. After inspecting the mock-ups of these two aircraft, Jeschonnek and Udet decided on the four-engine bomber after all and assigned the task to Heinkel. In the summer of 1938 Heinkel also received orders to construct a second model, with a double power plant, to be constructed in as modern a form as possible. On 29 November of that year the Technical Office sent instructions that all aircrafts were to have double power plants and diving capability.^{23*} The decision to construct an He-177 with double power plant and diving capability was to become one of the most fatal decisions ever made by Luftwaffe leaders. This aircraft cost the lives of thirty crews just during its trial runs, and never took its place at the front.²⁴

The further development of the Me-110, whose range was completely inadequate, to the Me-210 (intended by the General Staff

* Capt. Pohle states that the General Staff was merely interested in determining whether it was theoretically possible to construct a four-engine bomber with dive-bombing capability, but that series production should not have been held up because of this requirement.

to be a super-speed, long distance dive-bomber) could not be completed by the beginning of the war, and its subsequent development proved to be one of the great disappointments of the German Luftwaffe.

In the meantime there arose the promising idea that the traditional airscrews, which permitted a top speed of about 500 miles per hour, might be replaced by rockets, or by turbine or jet engines. The Heinkel firm was the source of both of these ideas and, with the support of the Development Branch, Dr. Wernher von Braun began the experiments which led to the He-176. This first German aircraft with rocket propulsion was tested in the air on 20 June 1939. It was then demonstrated before Hitler at Rechlin on 3 July of that year. Yet, despite the uniqueness of this craft, those who observed this demonstration were not fully aware of its monumental significance.²⁵

The Brandenburg Engine Works (Bramo) developed a jet engine (the He-S-3) for aircraft, and it was on the basis of this engine that the Heinkel firm built its He-178. Because of the favorable demonstration of this latter aircraft on 1 November 1939 before Milch, Udet, Lucht, and others, the Technical Office decided to take direct action in producing jet aircraft.²⁶

At the outbreak of World War II, the Luftwaffe had three types of bombers, He-111's (of which 787 had been produced), Do-217's (331), and Ju-88's (18), one dive-bomber, the Ju-87, of which 366 had been produced; one ground attack aircraft, the Hs-123 (40), two fighter types, Me-109 (1056) and Ar-68 (28), a single transport model, Ju-52's (552), three tactical reconnaissance aircraft, Hs-126's (275), He-46's (67), and He-45's (14), and only one long-range reconnaissance plane, the Do-17, of which 257 had been built for that purpose. The Luftwaffe also had 167 various types of naval aircraft.

The Luftwaffe Administration Office

As an independent branch of the Wehrmacht the Luftwaffe was entitled to have its own administrative apparatus. This organization only evolved gradually. In the beginning of the Luftwaffe organization the Reichs Aviation Ministry worked directly with local agencies or even utilized its own personnel in administrative functions.

From the Army and Navy administrative establishments the

Luftwaffe borrowed whatever principles were clearly in keeping with the characteristics of its own organization, and acquired several outstanding officers and civilians from both of these service arms. These people were well versed in administrative procedures and organization. The Luftwaffe Administration Office was organized into four major branches: LD-I (Budget Branch), LD-II (Personnel Branch), LD-III (Billeting and Construction Branch), and LD-IV (Food and Clothing Branch). Until 1945 there was only one major change in this structure. On 1 February 1939 the Economic Group was taken from the Budget Branch and transferred to the Office of the Chief of Luftwaffe Supply and Procurement. From 1933 until 1 February 1938 the Administration Office was directly subordinate to the State Secretary, but after this time to the General Staff.

At the territorial (or local) echelon the organization of administrative services was as follows:

1) All command headquarters and troupe units down to group (battalion) level had their special branches (IV a-Abteilungen) to deal with pay, personnel assignment, food, clothing, and billeting. The chief of the branch (the ranking civilian official in each case) was immediately subordinate to the commander. The branch accompanied the headquarters or unit on maneuvers or to the front. The branch chief also served as paymaster unless the entity concerned was serviced by a local base finance office.

2) In the Senior Air Offices (1 April 1934 - 1 April 1935) the Food Supply Officers (known as IVa officials) functioned as intermediaries between the Ministry and the local agencies. In the Air Service Commands (1 April 1935 to 1 April 1938) this function was fulfilled by the Air Service Command Food Supply Officers, in the Luftwaffe Groups and Commands as of 1 April 1938 by the respective food supply officers, and in the Air Fleet Commands, after the redesignation of the Luftwaffe Group Commands on 1 April 1939, by the Air Fleet Food Supply Officers. They were responsible for activities listed under section 1 (above), and took care of personnel matters (except for officer personnel), the physical plant, and finances.

3) The Air District Commands created on 1 April 1936 were also assigned food supply officers, who were made subordinate to their counter parts in the Air Service Commands (Luftwaffe Group Commands, Luftwaffe Commands, and Air Fleets).

4) The assignment of qualified administrative officials to the airfield areas was a further step in the decentralization of administrative activity which was particularly welcome in the areas of physical plant maintenance and utilities and billeting.

As early as 30 January 1933 an increased emergency budget (Special Plan XI) was approved in the aviation branch of the Reichs Aviation Ministry to take care of the increased needs in the field of personnel recruiting. Preliminary work on the first formal budget of the Reichs Aviation Ministry was begun on 1 October 1933, and this budget for fiscal year 1933-34 (1 April 1933 to 31 March 1934) was introduced into the public (white) budget as Special Plan XVI. This called for the expenditure of approximately 78,350,000 Reichsmarks, and was augmented by an additional 30 or 40 million from the Army and Navy budgets, since both of these service branches contributed to the expenditures anticipated under Special Plan XVI. Most of these expenditures were classified Secret.

During the period of secrecy, which, from the financial viewpoint, extended until the outbreak of war, there were two separate budgets for the Luftwaffe. The "white" Special Plan XVI, which amounted to 210,200,000 Reichsmarks for the fiscal year 1934-35 and 340,000,000 annually after 1936, and the "black" Special Plan XVI, which amounted to approximately 3,000,000,000 Reichsmarks per year after 1935, was mostly covered by Mefe bills.* Although the "black" Special Plan appeared neither in

* Editor's Note: Hjalmar Schacht, President of the Reichsbank, in an effort to support the rearmament and construction problems in Germany and to assist in the work creation programs, considered some means to use the great industrial complexes and their stockpiles in the process. He feared inflation on the home scene and lack of confidence in the Reichsmark abroad if these government projects were supported by inflationary financial measures. As a result, considering Germany's materials and industry as a form of dormant capital, he encouraged the formation (by four financiers after whom the organization was named) of a corporation which could supply short-term (90 days up to five years), interest-bearing notes to support the government in its armament and industrial projects. The German government assumed direct liability for these notes. Mefe bills were thus a type of money, closely resembling a true interest-bearing

the Reichs Budget nor in any other public budget, there was a careful accounting of all expenditures made under its authority.

Allotments from the two budgets were made in careful coordination with the allotments from the Army and Navy budgets.

The Personnel Branch of the Luftwaffe Administration Office was entrusted with the personnel build-up of the Luftwaffe (civilian officials and employees). This Branch represented the interests of the Luftwaffe in negotiations with the various organizations, with the trustee agencies of the Luftwaffe, and, most of all, with the Reichs Finance Ministry. Since it handled questions pertaining to payrolls and disputes over salaries, it affected every member of the Luftwaffe.

To put it more succinctly, the Personnel Branch was responsible for securing a sufficient number of properly qualified employees for the Luftwaffe. These employees were recruited for more than a hundred different categories of work from technological research to administration, but, in view of the sudden expansion in all departments it was difficult for the Personnel Branch to find applicants capable of meeting the requirements established by the individual technical branches. Training courses and schools had to be utilized in order to compensate for these deficiencies. Applicants for top-level positions were required to demonstrate their familiarity with and an understanding of the problems of field level units.

The Personnel Branch of the Luftwaffe Administration Office

note, which were issued by a government-instigated corporation. Since the amount was always limited -- in 1937 the Reichsbank purchased 12,000,000,000 Reichsmarks in Mefo bills -- the measure was not inflationary and proved to be a clever expedient. See Hjalmar Schacht, My First Seventy Six Years: Autobiography of Hjalmar Schacht (Translated from the German by Diane Pyke), London: Wingate, 1955, and Edward N. Peterson, Schacht: For and Against Hitler: A Political Economic Study of Germany, 1923-1945, Boston: Christopher Publishing House, 1954.

was also in charge of examining the budgetary expenditures of the Reichs Aviation Ministry. It supervised the operation of the Luftwaffe finance offices and took care of the necessary accounting with the Reichs Finance Office. At the close of each fiscal year the Reichs Finance Office submitted a Reichs Budget Account to the Budget Branch of the Luftwaffe Administration Office for justification of expenditures which either exceeded, or failed to come up to, the amounts allotted. This was then reviewed and passed on to the Reichs Audit Office and to the legislative bodies of the government.

Once the budget was approved, the agencies concerned were responsible for assuring through their subordinate organizations that the allotted funds were expended in accordance with regulations and that justifications for expenditures were forwarded to higher headquarters. Nearly all of the amounts authorized by each year's budget could be carried over into the following year without a penalizing decrease in allotment for the following year. Expense account funds and representation funds required no detailed accounting, and their allotment was the responsibility of the commander concerned.

The Billeting and Construction Branch of the Luftwaffe Administration Office was responsible for the construction of billets and other buildings and establishments, which included the selection of plans and sites, the purchase, lease, or rent of property, etc. Only in special cases was it entrusted with the inspection of industrial plant facilities.

The Luftwaffe has often been reproached for the large amounts spent on construction, but it should be pointed out that most of these Luftwaffe installations were located far from any larger settlements, on islands, or in generally isolated areas. It was clear that a certain degree of comfort and recreation (pleasant clubrooms, lounges, messes, gymnasiums, swimming pools, theaters, apartments for married personnel, commissaries, etc.) had to be provided for the thousands of young men assigned to these installations.

The Luftwaffe deliberately abandoned the monotonous style used by the Army and Navy in their construction projects, and, without any increase in construction costs, managed to build installations which were nicely adapted to the terrain in which they were located.*

* See figures 25, 30, 31.

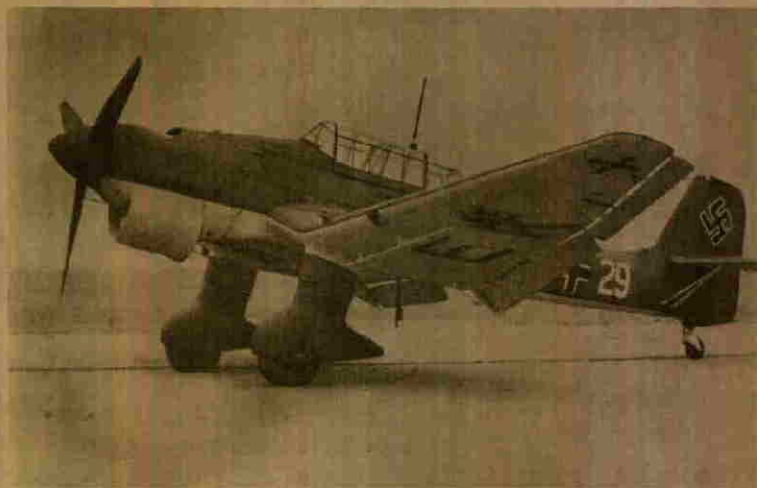


Figure 28

The standard Luftwaffe dive-bomber,
the Junkers Ju-86, "Stuka."



Figure 29

The Focke-Wulf Fw-189 Tactical Recon-
naissance and Multi-Purpose Aircraft.

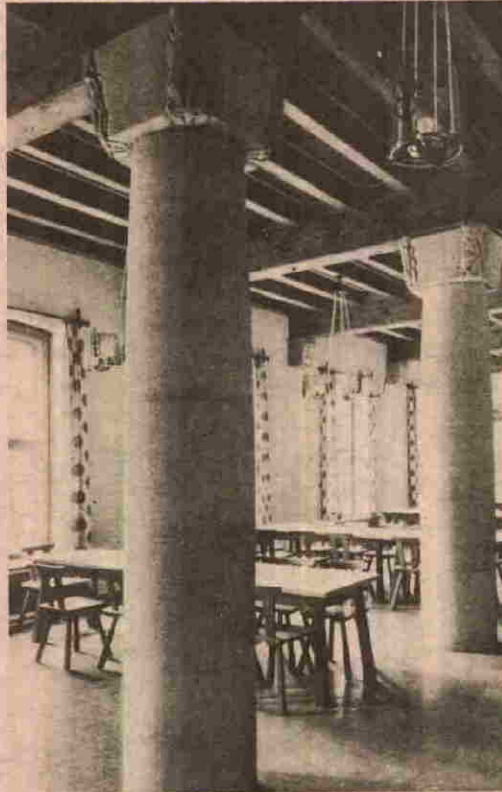


Figure 30

An attractive mess hall at a modern
Luftwaffe base, 1938.

The most expensive items in Luftwaffe construction were caused by the need to prepare the terrain for construction (preliminary ground work, laying light and water lines, streets and railway lines) and by the need for air raid shelters. The exigencies of air defense and civil defense made it necessary to disperse billets and living quarters, to dispense with high buildings and large blocks of houses, to camouflage vital installations, to take appropriate steps to counter the effects of incendiary bombs, and to provide shelter for personnel as well as ammunition and fuel.

The continual need to enlarge and improve airfields and the need to equip them with technically complex installations also resulted in an increase in construction and maintenance costs, and the need to accomplish so much in a relatively short span of time inevitably resulted in higher costs.

The Administration Office's Food and Clothing Branch worked closely with its counterparts in the Army and Navy. The Luftwaffe uniform was similar to that worn by the air forces of some other nations, and a special procurement section working in collaboration with the Army Clothing Branch purchased the uniforms for the entire Luftwaffe. Clothing offices were set up to handle the distribution of this clothing, and a Sales Branch served as the intermediary between the producing firms and the final consumers (officers, civilian officials, and officer candidates).

As far as food procurement was concerned, a certain amount of independence had to be granted to remotely located units and headquarters. Furthermore, special arrangements had to be made for flying units, which received special allotments consisting of the standard flying ration, emergency rations, and special rations for personnel (such as paratroops) engaged in special missions.

No serious difficulties were ever encountered in the recruitment of enlisted personnel and non-commissioned officer personnel for the Luftwaffe. Those who volunteered -- there were always enough of these -- represented the idealistic youth of the nation. There was also no difficulty in recruiting enough qualified technical personnel from among the flying enthusiasts of the Reich.

All personnel recruited for flying training were required

to pass certain preliminary examinations designed to test their aptitude for such training. Those unable to pass these tests satisfactorily were assigned to the flak artillery or signal communications forces. These services, particularly flak artillery forces, were seldom able to recruit the necessary qualified personnel. Flak forces established the so-called E-batteries (replacement batteries), which provided four-week training courses for men thirty to forty years old for assignment to the home units being established.

Luftwaffe Groups (which later became Air Fleets) were responsible for personnel replacement throughout their respective areas of jurisdiction. Personnel needs which could not be met by recruiting of volunteers were reported to the Reichs War Ministry. After completing preliminary training, replacement personnel were assigned to the Air District Commands for further assignment to specific units. The Air District Commands also took care of the assignment of replacement personnel to the signal communications and flak artillery forces.

The Luftwaffe Officer Corps

The establishment of a numerically adequate and highly qualified officer corps for the Luftwaffe was a much more difficult task than the procurement of enlisted personnel. The cadre of experienced officers which could be taken over from the 100,000 Man Army was limited to the 220 names contained on the aircraft pilot roster. The Luftwaffe thus had no alternative but to borrow personnel from the Army, a procedure which has been previously mentioned.

Among the many highly competent officers acquired from the Army in this manner were Wever and Kesselring, and the future Luftwaffe Personnel Chief, Col. Stumpff. Until June of 1937 it was Col. Stumpff who was in charge of building up the Luftwaffe's commissioned and non-commissioned officer cadre and of insuring that the officer corps was not dominated by exclusively political tenets. The National Socialist Party, the SA, and even the SS, sought to gain a foothold in the Luftwaffe. Stumpff naturally had to accept the fact that Goering was determined to bring many of his old comrades into the organization, among whom were many who had long since become unaccustomed to the rigors of military life or of the devotion to duty expected of a soldier. Most of

these came into the German Air Force with very high ranks.* Even Stumpff himself, not to mention State Secretary Milch, had advanced from captain to general with unprecedented rapidity. It must be counted in Goering's favor that he proved to be a reliable support for his Personnel Chief in controversies with the Nazi Party.

In order to recruit the necessary number of officers, Stumpff had no choice but to resort to measures such as the re-activation of retired personnel, the assignment of replacement officers, and an expanded training of new officer candidates.†

Engineer Officers

During the Reichswehr period many officers had been granted special arrangements so that they might earn their diplomas in engineering at one of the German Technical Colleges (Technische Hochschulen). In most cases these men did not get the subsequent experience which is normally a part of the professional life in this field. Some of these officers, however, did take advanced work or continued on to the doctorate in the field of engineering. One of the later Air Fleet Commanders, Freiherr von Richthofen, was one of these.††

It was no easy matter for the Luftwaffe to build up a competent and adequate corps of engineers. Once the decision had been made to accept engineer personnel as officers of equivalent rank (being retained as civilian officials), most of the engineers employed by the Wa Prüf 8 Office were immediately appointed to

* Examples of officers who owed much of their rank and prestige to this policy were Bruno Loerzer, Ernst Udet, Alfred Keller, and Robert Ritter von Greim.

† Officer candidates were trained at four Air Academies (Luftkriegsschulen), Dresden, Berlin-Gatow, Wildpark-Werder, and Fuerstenfeldbruck. These were associated with the flying schools of the A/B category. The Advanced Luftwaffe School (Hoehere Luftwaffenschule) in Berlin-Gatow trained candidates for the academies, after weeding out those who were unpromising.

†† In Germany the diploma in engineering (Diplomingenieur) was granted upon the successful completion of the four year course. It was thus equivalent to the American B.S. degree in engineering.

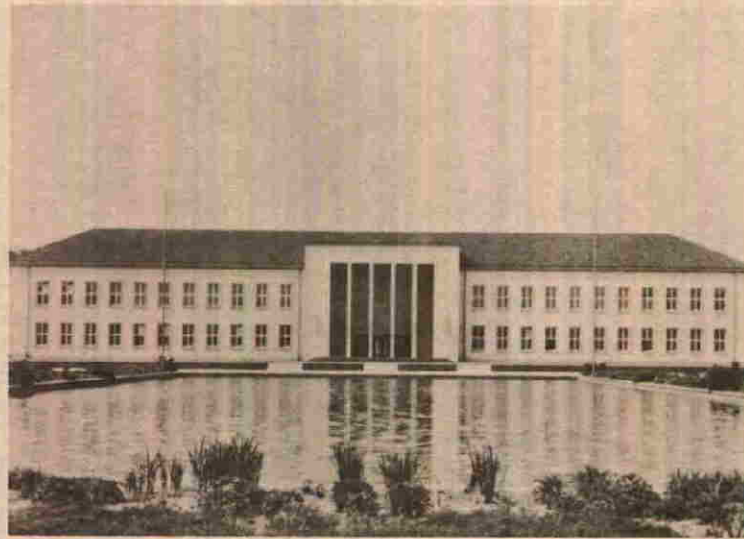


Figure 31

The Mathematics Institute at the Luftwaffe
Technical Academy, Berlin-Gatow.



Figure 32

Inspection of a new class by the Commandant at
the Luftwaffe's Air War College.

high-ranking positions. At that time most of the engineers came to the Ordnance Office directly after graduation, and thus had no experience with industry or in the field in other capacities.

In an engineer corps established on the basis of civilian officials the licensed engineers in higher-ranking positions and top-level agencies and the non-academic practical engineers could scarcely establish a common meeting ground. The Chief Engineers (Chefingenieure) of the Technical Office -- this was Professor Bock prior to Udet's term of office, and Generalstabsingenieur Lucht from autumn of 1936 until Udet's suicide on 17 November 1941 -- seemed to be incapable of welding these two camps into an effective whole. All personnel in the engineer forces came under the personnel administration agency of the Luftwaffe Administration Office until the establishment of the Office of the Chief of Luftwaffe Supply and Procurement.²⁷

The Luftwaffe General Staff

On 1 August 1936, after some resistance on the part of Goering and Milch and some degree of reluctance on the part of General Wever had been overcome, the General Staff of the Luftwaffe was established. There was already a small experienced cadre of officers on hand, since about forty General Staff officers had transferred to the Luftwaffe at the time the Reichs Aviation Ministry was set up.* Some of these were officers who had served on the General Staff during World War I, while others had received their General Staff training with the Reichswehr. Only a small percentage came from the Navy.

During 1936 and 1937 a good many officers who completed their General Staff training at the Army War Academy (Kriegsakademie) transferred to the Luftwaffe. Most of them still had to complete their flying training before they could be accepted. The first graduates of the Air War Academy (Luftkriegsakademie), which was established on 1 November 1935, became available for assignment

* See Generalleutnant (Ret.) Andreas Nielsen, The German Air Force General Staff, USAF Historical Study No. 173, Maxwell AFB, Alabama: USAF Historical Division, RSI, June 1959.

in 1938.* By the time the war began, the Luftwaffe General Staff had a sufficient number of officers. Like the Army General Staff officers, Luftwaffe General Staff officers were entitled to wear the General Staff insignia (the crimson and gold lapel insignia and the double crimson stripes on the trousers).

Besides the Air War Academy, the Luftwaffe High Command opened on 1 November 1935 the Luftwaffe Technical Academy, an institution which was established with the intention of training ten officers a year in the intricacies of advanced aircraft technology. This project, which involved the expenditure of a considerable sum of money, was abandoned after a short time.

* See figure 32.

CHAPTER 5

LUFTWAFFE PREPARATIONS FOR THE WAR*

Basic Thinking on the Strategic and Tactical
Employment of the Luftwaffe

The basis for the thinking of Luftwaffe leaders with respect to the strategic and tactical employment of the German Air Force during World War II was laid down in 1936 in Luftwaffe Service Manual 16,¹ a handbook based upon preliminary drafts going back to the period prior to 1933. Most of it was the work of General Helmut Wilberg, who was killed in an air crash in November 1941,² but a good part of it is also attributed to General der Flieger Walther Wever, the first Chief of the Luftwaffe General Staff.

This guide was based upon the premise that the Luftwaffe was an independent branch of the Wehrmacht, but not an end in itself, and, in accordance with Paragraph 10 of the Manual, was to be concerned with the task of "subduing the enemy's armed forces."²

Luftwaffe Service Manual 16 clearly recognized the necessity of a centralized command. According to Article 24:

The agency in charge of military operations must ... have a clear picture of the potential effectiveness of its own air forces as well as of the potential effects of enemy air action on its own territory, and from this it must be in a position to draw the proper conclusions with respect to the most effective conduct of aerial warfare, to the organization of the air force, and to the air defense of the nation.³

* The material contained in this chapter and section is based on a study concerning Luftwaffe Service Manual 16 by Generalmajor (Ret.) Hans-Detlef Herhudt von Rohden, written in 1946.

² See the biographical section in the back of this study.

The agency in charge of military operations was designated as the supreme authority, responsible for coordinating the operations of the Army, Navy, and Luftwaffe, and for achieving the highest possible degree of effectiveness by shifting the point of main concentration within the individual branches of the Wehrmacht.⁴ The Manual stated further that:

When operations threaten to come to a standstill, it may well be that the Luftwaffe is the only instrument capable of preventing the decimation of the ground forces and of forcing a decision. The prerequisite for success in this case is the complete shift of the point of main effort to aerial warfare, even at the expense of other instruments of war. Inevitably, such a shift takes time. It must thus be carefully prepared in advance.⁵

In view of the outcome of World War II, it can be asked whether or not Luftwaffe Service Manual 16 actually provided a clear definition of "decision" or, in other words, whether it made clear the strategic significance inherent in the "employment of Luftwaffe forces." The Manual listed three primary missions of the Luftwaffe: combating of enemy air forces, intervening in ground or naval actions, and combating the sources of the enemy's strength and disrupting logistical lines to the front. Only within the framework of the overall situation could one decide which of these was the most significant.⁶ It seems clear that the authors of the Manual were not irrevocably committed to strategic air warfare, inasmuch as they spoke of a "battle," rather than of "destruction" or "the attempt to destroy" as would have been true had they been guided exclusively by Douhet's principles. Paragraphs 10 and 11 of the Manual reflect a certain caution and reserve.

Although combating the enemy's sources of military strength was viewed as essentially decisive, the Manual stated that such action might not always be immediately effective since it might not exert an influence upon Army and Navy operations until too late. Moreover, this use of airpower ordinarily ties down a substantial force for a long time. Therefore, unless the destruction of these targets could be expected to have an immediate effect upon the course of operations, the disruption of logistical lines to the front and the combating of the enemy's sources of strength could only be recommended in instances in which ground or naval operations represented either the preliminary step of a critical engagement in which decisive operations

were nearing a conclusion, or in which there was reason to expect that the war could be ended almost solely through the destruction of the enemy's sources of strength.⁷

In the interest of conserving forces, Manual 16 prescribed dispensing with the concept of "destruction" if the desired effect could be achieved by harassment or containment. In this connection it should be noted that nineteen paragraphs of this directive were devoted to operations against enemy rail and highway facilities, while only two subparagraphs of Paragraph 161 were related to operations against enemy ground installations, and these mentioned "disrupting the enemy's materiel supply" by means of damaging the ground organization or "by interdicting certain areas (seaports, production centers, inland harbors) from the enemy hinterland, and of weakening the enemy by disrupting his logistical activity."⁸

Generally speaking, there was a noticeable lack of conviction concerning the vital importance of strategic operations, especially since there was no mention of the necessity of integrating them into a positive contribution toward the ultimate objective of defeating the enemy, as would naturally have been true of any logical continuation of procedures based upon Douhet's principles.

The pervading confidence of the Luftwaffe High Command in both the speed of its bombers and in their ability to defend themselves was reflected by the fact that the Manual failed to provide for fighter escorts. Paragraph 229 was a reflection of the optimistic views which were then popular in the highest Luftwaffe command circles:

. . . bombers attacked by enemy fighter forces are to carry out the necessary defensive measures independently, without losing sight of the need to complete their original missions if at all possible. Those bombers not bothered by enemy fighters are to continue on their course, without permitting themselves to become involved in aerial combat.⁹

German air doctrine interpreted combating of the enemy to mean operations carried out against the enemy air force (including its supply and production facilities), but the concept of air supremacy was conspicuously lacking. Thus, for all practical purposes, this phase of activity mainly involved the direct

support of Army operations by reconnaissance and air defense units under the Army's command, with the stipulation that, if the ground situation or overall military situation should require it, "fighter aircraft as well" could be assigned to augment these forces.¹⁰ According to Paragraph 122, large Luftwaffe elements could also be employed "in decision-seeking ground battles," in which case the Wehrmacht High Command would be responsible for determining the scope of the air support required. Paragraph 135 specified that the Navy would also be accorded direct air support by the reconnaissance and bomber units regularly assigned to it, and that larger Luftwaffe forces could be placed at its disposal in order to provide indirect air support through attacks on enemy naval and air bases as well as through operations to counter enemy landing efforts.

The entire Manual reflected high ethical standards, especially in Paragraph 186, which rejected in principle the concept of "terror raids upon cities." However, the Manual expressly reserved for the Luftwaffe the right to carry out "retaliatory raids" when justified, stipulating that "the attack in question must be handled in such a way that its retaliatory character is clear."¹¹

Paragraph 24 of the Manual singled out the concept of attack as the principle which had to be "dominant over all others." This principle crystallized Germany's thinking in terms of the conduct of aerial warfare, and may well be connected with the ethical concept that air defense operations should be restricted to protecting the victims of attack, and that the part of air defense operations entrusted solely to fighters and flak artillery should be regarded as an offensive defense against enemy invaders. At that time, however, very little thought had been given to the possibility of air battles for the protection of the Reich itself, and Paragraph 16 dispassionately pointed out that the dangers to the Wehrmacht and to Germany from enemy air attack could never be adequately met by defensive measures over the home territory alone.* The Luftwaffe leadership believed that, at the outset of hostilities, air forces ought to be used offensively against the enemy air forces over the enemy's territory. Although Service Manual 16 reflects a fundamentally conservative concept of aerial warfare, certain aspects of the more

* Hitler's ideal at this time was the abolition of bombing by all air forces.

revolutionary thinking of Douhet show through. There are occasional indications of Douhet's thought, but it is also clear that at no point was it wholeheartedly accepted.

This directive was not intended to proclaim unalterable dogmas, and its authors were by no means irrevocably committed to the principles outlined in it. It was the task of Luftwaffe leaders to supplement the Manual if necessary, to revise it uniformly and completely in the light of subsequent developments in weapons and equipment, from the experiences gained during the Spanish Civil War, and from new advances in staff thinking (at home and abroad) in the field of aerial warfare.¹²

But 1936 was not 1939! The section on air transportation, for example, which was inserted as section VI as an afterthought between section V and the previous section VI, could well have been revised on the basis of the air transport experiences of Ju-52 units in Spain during 1936. This would have expanded the prevailing thought on aerial warfare and would have pointed to a promising field for future development. Furthermore, it would have spurred the organizational experts on to think in terms of establishing a really firm structure for the employment of this new air arm. Unfortunately for the Luftwaffe, this Manual was never revised before the outbreak of war.

The Training of Top-Level Luftwaffe Leaders

Top-level Luftwaffe leaders were well aware of the importance of adequate training for higher commanders so that they could fulfill their assignments in the future commitment of the German Air Force. During the pre-war period this training took the form of war games, staff journeys, and maneuvers.*

War Games and Staff Journeys

During war games and staff journeys a military operation

* Material in this section is based on a study by General der Flieger (Ret.) Paul Deichmann, "Operative und taktische Schulung der Hoheren Fuehrung der deutschen Luftwaffe" (Strategic and Tactical Training of the Higher-Ranking Commanders in the German Air Force"), Karlsruhe Document Collection.

was followed through in theory with the help of maps, while in the maneuvers troop units also participated. The operations for this sort of study were usually actual aspects of the military situation which the Luftwaffe might expect to confront in case of war. They thus provided an opportunity for testing the theoretical battle instructions.

The first large-scale war game carried out by the Luftwaffe took place at the end of 1934 under the direction of General Wever, Chief of the Air Command Office, in the old building of the Reichs Aviation Ministry in Behrens Street, Berlin. The participants included all of the branch chiefs of the Ministry and those high-level commanders and their deputies whose units were scheduled for immediate deployment in the event of war. The subject was the commitment of the Luftwaffe in case of a French attack on Germany for the purpose of interfering with the Reich's armament program. The conditions under which the war game was carried out simulated those which were anticipated in terms of the presumed development of the overall military situation. It was assumed that the German Army, still relatively weak at the time, was retreating, but still fighting, in the mountainous regions of the Weserberg, the Vogelsberg, and the Rhoen.* The war game included the deployment and commitment of air forces at the beginning of operations. Neither the battle plan of the Army nor the relatively small size of the Luftwaffe permitted more than a defensive employment of the available air units. Nevertheless, this did not reflect fundamentally defensive thinking on Wever's part as Rieckhoff¹³ and Walter Goerlitz¹⁴ would have us believe.

Even at that time General Wever regarded the conduct of strategic air operations to be paramount. General der Flieger (Ret.) Paul Deichmann, who was at that time a Staff Consultant in the Operations Branch and a deputy to Wever, reports:

During the course of the war game, the bomber units were employed deep in the heart of enemy territory. At that time most of these units were equipped with provisionally armed Ju-52's,

* Located in Upper Hessen.

which were completely inferior to the French fighters. Officers in charge of the maneuver suggested to General Wever that he assume a loss of 80 percent for the bomber force, but Wever refused brusquely with the words, "That would deprive me of my confidence in strategic air operations!" Although the maneuver leaders pointed out that the percentage of losses would presumably be that high only in this particular instance, i.e., until the German Luftwaffe had more modern bombers at its disposal, Wever insisted upon a lower percentage.¹⁵

Political factors naturally played a part in the conduct of war games, and a maneuver prepared and scheduled for the winter of 1935-36 was cancelled for being "out of date," since it dealt with a theoretical war against Poland. At that time Czechoslovakia was in the limelight, and Hitler was thinking of having his Wehrmacht settle that issue first.

During the staff journeys* higher commanders had the opportunity to try out tactical problems. One example was the General Staff journey to Salzbrunn from Schleissheim in the spring of 1936 under Wever's guidance. Besides a number of officers from the Operations and Organization Branches of the Luftwaffe General Staff, quite a few inexperienced top commanders took part in that phase of operations devoted to the commitment of fighters, a matter which was examined in some detail. Goering

* Editor's Note: These journeys were designed to enable participating officers to become familiar with special problems involving operations from Germany's borders, such as those planned for possible use against Czechoslovakia. Those in the winter seldom lasted longer than ten days, while the summer trips could be as long as four weeks. These journeys were made by automobile or other appropriate vehicles to allow the officers to get an "on the spot" feeling for the terrain, the conditions, etc. Sometimes the area was scanned by the group from aircraft. Various aspects of tactics and strategy were studied during this time, and very brief war games (carried out in the most realistic manner possible under the conditions) were staged to provide practical exercises in command and leadership. Such days were called "game days." The summer journeys became the capstone of the General Staff courses.

was on hand for this exercise, and the Commanders in Chief of the Army and Navy attended the final discussion session. The maneuver, based on the premise of a war with Czechoslovakia, clearly reflected the views of the High Command of the Luftwaffe with respect to the commitment of air forces. Only a small number of bombers were assigned to support the Army in its effort to break through the Czech border fortifications. The preponderance of Germany's air power was utilized in relentless blows designed to destroy the Czech Air Force, and, by purely strategic operations, to break the enemy's resistance in the shortest possible time. This maneuver was the first demonstration of the Luftwaffe as an independent factor capable of deciding the outcome of a war.

In the autumn of 1936 the Senior Quartermaster of the Luftwaffe directed a quartermaster exercise in Wuerzburg, which was intended to train the officers who had been selected for careers in the quartermaster field and to test Luftwaffe divisions. The final discussion session was attended by State Secretary Milch, by the new Chief of the General Staff, General-leutnant Albert Kesselring, and by the Chief of the Luftwaffe Operations Branch, Col. Wilhelm Mayer. The exercise gave ample evidence that the General Staff Chief clearly recognized the importance of logistics in air operations. Furthermore, the experience gained contributed a great deal to the preparation of the Luftwaffe Service Manual 90/2, "The Supply of the Luftwaffe in Wartime."

The staff and command post exercise of 1937 was designed to determine how quickly the Luftwaffe could be deployed in the event of a conflict with a neighboring state. Since the geographical situation was so favorable for this exercise, the deployment was carried out along the Czech border. Each staff down to group level set up a small air staff which was moved by transport aircraft. Each flak artillery unit down to battery level (including reserve units in the process of activation) was expected to provide an operations staff. Signal communications forces (without reserves) were committed in their entirety.

In accordance with instructions, the exercise staffs were to report to the military combat headquarters and to the operational airfields selected for the simulated war against Czechoslovakia. Flak artillery reconnaissance troops were assigned

to firing positions scattered throughout all of Germany.

In order to keep the purpose of the exercise from leaking out to other nations, maps were used on which all place names had been altered. In addition, a second (dummy) radio network was set up and placed in operation in northern Germany, so that foreign military observers would conclude that the exercise was between northern and southern Germany. This exercise proved conclusively that the German signal communications were inadequate for the demands of wartime, and that many new radio cables had to be laid. Numerous modifications had to be made in the Mobilization Plan and in the deployment and battle instructions by command headquarters at all levels.

Maneuvers

Luftwaffe units as well as Army and Navy forces took part in the Wehrmacht maneuvers of 19 to 24 September 1937, in which it became apparent for the first time that the geographical framework of operations, while sufficiently extensive for ground operations, was hardly adequate for Luftwaffe operations. Western Pomerania and eastern Mecklenburg had been selected as the Army maneuver area, with the Navy stationed in the middle and western Baltic. The Luftwaffe area, on the other hand, extended all over Germany, including East Prussia. The course of the maneuver substantiated the fundamental German concept of a strategic air commitment.

A careful evaluation of this particular maneuver, which entailed sizeable strategic commitments of airpower, could have taught foreign military observers a great deal about Germany's views on the conduct of aerial warfare in accordance with the concepts of Douhet, the establishment of air supremacy, the provision of air support for the Army and Navy, and air defense doctrine. This could, therefore, have provided valuable indications of the Luftwaffe's probable methods of commitment in case of war.^{16*}

The Last Staff Training before the War

At the turn of the year 1937-38, when the danger of a war

* The exercise was openly discussed in the German press.

with Britain began to emerge, Goering instructed the Commander in Chief of Luftwaffe Group 2* (Felmy) in Braunschweig, who would presumably be in charge of operations in case of such a development, to carry out a map exercise on this basis. In early 1939 the Luftwaffe accomplished an exercise of this sort, which resulted in far-reaching conclusions concerning organization and command. The bombers then available to the Luftwaffe turned out to be grossly inadequate in range, requiring the establishment of new airfields along the German coast. This, in turn, involved certain aspects of international law. The policy of air attacks upon open cities had been firmly rejected.¹⁷

The Commander in Chief of the Luftwaffe established in May of 1939 a special staff under Generalleutnant Hans Geissler to study the questions of preparing and conducting a Luftwaffe attack on and over the sea as well as along the coast, and of establishing the requirements to be met in the areas of command, organization, training, and equipment.

On 14 June 1938, Hitler inspected the Luftwaffe instruction units. There were combat maneuvers off the Pomeranian coast, attended by the Commanders in Chief of the three Wehrmacht branches, Goering (Luftwaffe), General Walther von Brauchitsch (Army), and Admiral Dr. h.c. Erich Raeder (Navy). The Luftwaffe carried out a practice attack against an airfield defended by the Training Wing and by flak artillery.

In June of 1939 the General Staff made a trip to the Rhine, the last one held before the war began and the first and last one conducted by the young General Staff Chief, Hans Jeschonnek. During the final meeting, which was well attended by higher commanders of the Luftwaffe, Jeschonnek discussed the prospects of and the probable requirements for an air operation in Poland, stressing the importance of air operations against the enemy air force and in support of the Army during the first few days of war. In Jeschonnek's words:

The largest possible force, including the squadron reserves, must be committed in the first, sudden attack. The fact that the enemy antiaircraft defenses

* This was later redesignated as the Second Air Fleet.

† Editor's Note: In Germany recipients of only an honorary doctorate are invariably entitled "Dr. h.c." or (doctor-honoris causa).

have not yet acquired an effective operating routine must be exploited to the utmost and the assigned area bombarded as intensely as possible.¹⁸

The General Staff was apparently convinced that Germany would only have to cope with a single (and relatively weak) enemy, Poland. He emphasized, however, the need for increased mastery and further development in the field of tactics.

A dive-bomber exercise, carried out shortly before the Polish campaign to train aircrews in operations against enemy troops,* ended in tragedy. The exercise was organized by General Freiherr von Richthofen, a past master in dive-bombing operations and Commander of the VIII Air Corps. By disregarding an unfavorable weather report, a group of aircraft from the 77th Dive-Bomber Wing started diving through a heavy cloud cover which, over the target, extended nearly to the ground. As a result, most of the aircraft could not pull out in time and crashed with a loss of more than twenty planes and crews. Since the losses were so high the accident had to be reported to Hitler, who interpreted the disaster as an unfavorable omen for the coming war.¹⁹

The Compilation of Operational Data†

Even during peacetime it was relatively easy to gather data on air targets which would presumably be attacked during the initial phase of a war.†† As early as 1935 a Target Preparation Group (Gruppe Zielbearbeitung) was attached to the Operations

* Until 1939, dive-bombers had only received training at home for strategic air operations.

† This section is drawn largely from the studies prepared by General der Flieger (Ret.) Paul Deichmann.

†† Editor's Note: In his first volume on the war against Russia, Generalleutnant (Ret.) Hermann Plocher emphasizes the difficulty which was experienced in trying to collect intelligence data about the Soviet Union, which, even prior to World War II, was a closely guarded area. See The German Air Force versus Russia, 1941, USAF Historical Studies No. 153, Maxwell AFB, Alabama: USAF Historical Division, ASI, July 1965, pp. 16-20.

Branch of the Air Command Office, and on 1 January 1938 was made a part of the Foreign Air Forces Branch in order to consolidate the operations of gathering and evaluating target data.

A folder containing all important and pertinent data was prepared for each individual target. This included maps for use during the approach flight (scale 1:250,000) and a map of the target area (1:5,000) indicating any unusual features as well as the position and presumed strength of antiaircraft defenses and shelters. Whenever possible, these were supplemented by exact situation plans or sketches showing the target in detail. Questionnaires were included, containing notations relative to the importance of the target to the enemy, key points on the target, most favorable timing for an attack, and parts of the target vulnerable to fire or explosion.

Production schedules for enemy factories or industrial plants were calculated, and individual targets were classified into target groups. This served to provide a basis for an overall evaluation of the various sectors of the enemy's economy.

The large number of target groups and sub-groups and the extensive number of targets contained in each group made it necessary to evaluate the relative priority of the individual groups and targets. This was fairly simple in the case of small-scale targets, where it was possible to determine their relative importance by comparison with others of approximately equal size. It was more difficult, however, in the case of larger-scale targets, which included diversified fields of the enemy's war effort. Examples of small-scale targets were mobilization centers, important government and military headquarters, armed forces supply storage depots, and harbors, while war production facilities, light and power systems, import activity, food supply, and rail and highway networks were classified as large-scale targets.

Completed target data had to be constantly reexamined and evaluated and kept current for instant combat utilization. The results of this data and the studies made from it were then kept on file in the Luftwaffe High Command to serve as a basis for strategic decisions and as an aid in the training of higher level command staffs. Studies made from the collected data could be regarded as being in the nature of recipes, which could be selected as the occasion warranted.

Because of this system of target data compilation and evaluation it was possible to set up a plan of attack for the Luftwaffe for the very first phase of each new campaign, such as was the case with Planstudie BLAU (Planning Study Blue) in preparation for the campaign against Britain.

The Air Defense File

The air defense file was more or less the counterpart of the target file, and was handled by a section of the Operations Branch of the Luftwaffe High Command. The purpose of this file was to list all installations in Germany which might possibly present attractive targets for an enemy air force and to assign air defense priority ratings to each. This work, which was carried out in close coordination with appropriate military and civilian agencies, resulted in the accumulation of highly valuable information concerning the weaknesses of a nation facing possible enemy air attack.

Flak defenses were then established in accordance with the importance of each installation and its vulnerability to aerial attack.

Deployment and Battle Instructions

The deployment and battle instructions issued in the spring of each year by Branch I (Operations) of the Luftwaffe General Staff were based on the premise that there would be war, and ordered the completion of the required preliminary preparations so that, in the event of a conflict, only a few brief code words would be needed to assure implementation of the plan. The first deployment and battle instructions were issued in 1936 under General Wever.* It was prophetic that these first orders, after they were completed and ready for distribution, had to be supplemented at Goering's command to include the possibility of a war

* Editor's Note: This would be the second if one considers the instructions for the Luftwaffe issued by the Reichswehr Ministry on 25 October 1933, outlining the action to be taken in case the League of Nations decided to take sanctions against Germany for withdrawing from the League. See folio G/a, Karlsruhe Document Collection.

with Russia, the realization of which would depend upon the attitude of Poland.²⁰

Preliminary preparations required by the 1936 orders included not only an exact determination of peacetime stations for the flak artillery, but also, whenever possible, the improvement and enlargement of these bases. Operational airfields were to be kept continually supplied with fuel, bombs, and ammunition, and the necessary railroads were to be prepared in detail.

The Luftwaffe General Staff issued its deployment and battle instructions for 1939 (under the code name "Planning Study 1939") on 7 February of that year. Under Section 3 of this document appears the leading statement:

Unless special projects have been assigned for completion, all operational measures are to be prepared with a view toward being ready to meet the worst possible development, namely, that war should break out without previous warning, leaving no time for adequate preparations or for systematic mobilization activity.²¹

These instructions were established to cover the possibilities of a war in the West, a war in the East, or a simultaneous outbreak of war in both the East and the West.

The Order for Operations against the East (Weisung fuer den Einsatz gegen Osten), issued in May of 1939, included an evaluation of enemy forces, instructions for the offensive forces, air defense forces, signal communications forces, the forces concerned with navigational aids and radio monitoring and intercept services, for those elements of the Luftwaffe attached to the Army and the Navy, general instructions concerning preparations for a war in the East, a glossary of passwords (in code), and a table with the probable timings of individual actions.

The Luftwaffe Mobilization Plan*

* Material in this sub-section is based on the study by Col. (Ret.) Adolph Hering, "Mobilmachungsplan der Luftwaffe" (Mobilization Plan of the Luftwaffe), and the study by General-major (Ret.) Conrad Seibt, "Mob. Plan, LDv 151" (Mobilization Plan, 151st Air Division), Karlsruhe Document Collection.

The measures to be taken in mobilizing the Luftwaffe were worked out by Branch II (Organization) of the Luftwaffe General Staff, which, on 1 February 1939, was redesignated Branch II (Planning and Mobilization). All plans connected with this mobilization were classified Top Secret Command Matters.

The Luftwaffe coordinated the Plan with the Army and the Navy in order to avoid duplication in the personnel groups to be called up and to make certain that enough equipment would be available for the units scheduled for activation. The Mobilization Plan was drawn up in such a way that it could be integrated into a general Wehrmacht mobilization or into orders for a single branch of the service.

This document, which also dealt with the legal aspects of transition from peacetime conditions to the exigencies of wartime, covered questions such as the procurement of required personnel,* of motor vehicles (emphasis being placed on acquiring large numbers of vehicles of the same model), of basic equipment, of clothing, food, supplies, payroll funds, the provision of billets, the scheduling of rail transportation and field post offices, and even the timely delivery of personnel identification tags.

Amendments in the directions referred to special measures which might become necessary in connection with mobilization, such as special regulations referring to the combat readiness of the Luftwaffe or of individual Luftwaffe elements, and guidelines thereto. Amendment V considered the steps which might be taken to prepare the Luftwaffe, or at least a part of it, for action in case a rather lengthy period of tension should precede the outbreak of war.† By means of predetermined "tension

* The necessary personnel had to be available in the vicinity of the activation center, since operational readiness generally had to be assured within four hours of the receipt of the original order.

† Hering and Seibt's information does not correspond with the text with respect to Amendment V (above). According to them, Amendment V is supposed to deal with the aircraft reporting service. This is obviously an error in numeration.

priorities" the Luftwaffe High Command could carry out exercises designed to test the performance of certain Air Service or Air District Commands under wartime conditions, without awakening the public to the fact that a general mobilization was taking place. By the time Priority II was ordered, however, the entire Luftwaffe was supposed to be ready for immediate commitment. The primary and ultimate aim of the "immediate measures" specified by the instructions was to achieve absolute combat readiness prior to the outbreak of war.

The Air District Commands* were responsible for the accomplishment of the preparatory work needed for the mobilization operations. From the standpoint of replacement personnel, the Air District Commands worked closely with the agencies in charge of military replacement personnel (Wehrersatzdienststellen), and from the standpoint of equipment (replacement vehicles) with the military replacement inspectorates (Wehrersatzinspektionen). Because unit activation had been carried on during peacetime, there was practically nothing left for the Luftwaffe to do when mobilization came. In the long run, however, the Luftwaffe never actually achieved the authorized strength it expected to have in the event of war.

From 1939 on, the Luftwaffe's flying forces and other personnel proved to be sufficient for the establishment of combat readiness. This was not true of the flak artillery and signal communications forces, which required additional personnel to come up to this status.

Landing fields were to be made ready for use as soon as possible by equipping them with the necessary signal facilities and by insuring their adequate supply. Schools, however, presented a special problem. While mobilization schools had to be established to train the unschooled people who would surely be called up during mobilization, / part of the equipment and aircraft

* See Chart No. 14.

/ Civilian flying training schools were to be taken over by the Chief of Training, and, in addition, special schools were to be set up for training in specific types of aircraft.

assigned to the schools had to be taken from them to assure a proper supply of combat units. This was naturally a serious blow to the schools.*

Bomber, dive-bomber, fighter, and strategic reconnaissance units were considered to be operational even during peacetime, while the tactical reconnaissance units -- their number was to be immediately doubled in case of war -- were weakened by the withdrawal of their cadres. They were later restored to war-time strength by replacements from the reserves.

In accordance with the instructions, each wing and group was entitled to a staff with a flight of three aircraft. Groups consisted of three squadrons of nine aircraft each, plus a wing reserve force of three aircraft for each of the squadrons.

Air transport units were to be set up within twenty-four to forty-eight hours, the crews and aircraft to be drawn from Lufthansa and from the schools. The latter were also responsible for setting up the airfield service companies.

Courier squadrons attached to the High Command of the Wehrmacht, the Army, Navy, and Luftwaffe High Commands, and weather reconnaissance and emergency medical squadrons, were formed from personnel and equipment of the appropriate training schools.

The Luftwaffe increased the number of its ground personnel staff, and arranged for the release of cadres for this purpose from peacetime airfield commands. These cadres were augmented by replacement personnel drawn whenever possible from the vicinity of the newly established bases. For those base areas not yet scheduled for improvement, progress schedules were set up to reflect the personnel and equipment requirements.

All of the flak units were motorized and therefore capable of cross-country mobility and immediate commitment. The motorized flak units released cadre personnel to the new units, which were then brought up to full strength by replacements from units in the vicinity. Flak units assigned to home defense missions were set up from cadres detached from the original batteries. Cadres for barrage balloon battalions were already available, and antiaircraft machine-gun units had existed even during peacetime when they were stationed near top priority defense installations.

* See p. 187.

Even during peacetime the motorized signal communications units assigned to the Commander in Chief of the Luftwaffe, to the Air Fleets, and the Luftwaffe signal communications regiments, were ready for action. Units assigned to the Luftwaffe ground organization -- some of these were motorized -- were forced to give up many of their troops for replacement units.

The supply and procurement offices, aircraft parks, equipment issuing offices, ammunition depots, and fuel dumps of the Signal Communications Forces were ready for action during peacetime, but, in those areas where no peacetime ammunition depots were available, they had to be formed from cadres detached from existing installations. These were then brought up to strength by replacements.

Air replacement groups (Flieger-Ergaenzungsgruppen) with both pilot and technical personnel were organized by drawing upon the schools and replacements, and were attached to the supply and procurement offices.

In case of mobilization, supply units were to be made up from the ranks of replacement personnel, from Luftwaffe construction units, and the Reichs Labor Service (Reichsarbeitsdienst or RAD). However, it had to be taken into account that part of the labor force was liable for military conscription, so that permanent replacements had to be secured by the fourteenth day of mobilization. Luftwaffe construction equipment platoons were set up using replacement personnel and vehicles.

Paratroop units were fully combat ready even during peacetime, were at a high state of training, and drew from the Parachute Schools for personnel and equipment.

The Ministry of the Interior (Innenministerium) organized the civil defense forces. This was a completely new organization, composed of elements from the Police, the Fire Brigade, the Red Cross, and the Technical Emergency Service.

The Western Air Defense Zone*

* This section is based upon a study by General der Flakartillerie (Ret.) Walther von Axthelm, "Die Luftverteidigungszone West" (The Air Defense Zone West), Karlsruhe Document Collection.

The High Command of the Luftwaffe established the Western Air Defense Zone along the western fortification line (West Wall). This zone extended for about 375 miles along the rear of the West Wall, from the Dutch border (at a point about as far north as Meunster) to Mannheim, from there to Lake Constance, and thence along the right back of the Rhine bordering on Switzerland. The depth of the line was about twelve and a half miles in the northern area, from twenty five to twenty eight miles between Wesel and Cologne, and about sixty two miles south and southeast of Koblenz (including the flak artillery defenses around Mainz, Mannheim, and Stuttgart).

In addition to providing extra protection for the Rhine-Westphalian industrial district and for the chemical and heavy industries along the middle and upper Rhine, the air defense line was designed to form as unbroken a fire barrage front as possible, while, at the same time, presenting an advance belt of operations for the areas and targets situated further to the east. The Muenster-Dortmund-Duesseldorf-Cologne and Mainz-Mannheim-Stuttgart areas were to be the points of concentration for the flak forces. Enemy aircraft, weakened by continuous losses while flying over the Zone were to be forced to climb to their maximum altitude (and into areas of poor visibility) in order to escape the range of German defensive fire. On the other hand, German planes returning from missions over enemy territory were to find protection against pursuing enemy planes once they had entered the area of defense. Furthermore, the Zone was to furnish air protection for German divisions being deployed in the West, for their assembly areas, and for their unloading centers.

Because of the all-out effort, flak artillery had 245 new reinforced concrete positions by the time the war began, and a continuous belt of searchlights behind and between these positions. Of the 245 positions, 197 were constructed for heavy units and the remainder for light and medium batteries. The erection of these positions required 3,000 carloads of materials, and cost 400,000,000 Reichsmarks. German leaders hoped that these positions, when fully manned by 250 batteries with 788 pieces of heavy flak artillery (8.8 and larger) and 576 pieces of light flak artillery, would provide a three-fold overlapping field of fire cover at an altitude of 23,000 feet. Considering the flying speeds at that time, this meant that every enemy aircraft would be exposed to five minutes of continuous fire by

three batteries at a time, assuring a concentration of about 600 rounds of ammunition on each individual target.

The administration of the Western Air Defense Zone was the responsibility of a Senior Commander of the Fortification Flak Artillery, appointed in 1938, with headquarters in Frankfurt am Main. On 15 November 1938 he assumed command of five fortification flak artillery battalions and of the Eifel and Black Forest Reconnaissance Staffs.

Measures in the Field of Training*

There were not enough flying training schools available in Germany to meet the demands brought about by the losses of flying personnel in training and by the activation of new units. In such circumstances it was impossible even to think of establishing a reserve of flying personnel. At the beginning of 1939, when the office of the Chief of Training of the Luftwaffe was first established, the Chief of Training had submitted a statistical report on the personnel situation to the General Staff, along with a request for permission to establish additional schools. This was disapproved on the ground that all available resources in the technical field were needed for the activation of combat units.

The Chief of Training therefore had no alternative but to act upon his own initiative. As a provisional measure he ordered each Luftwaffe group to accept twenty five men for training. These men were trained in single-engine aircraft and then assigned to advanced schools for specialized training. The Chief of Training also took steps to relieve the Luftwaffe of responsibility for providing initial aviation training to beginners. This pre-military aviation training was turned over to the National Socialist Flying Corps which established the necessary schools.†

* This section is based largely upon material prepared by General der Flieger (Ret.) Paul Deichmann in his study, "Die Ausbildung der deutschen Luftwaffe bis Kriegsbeginn" (Training in the German Air Force until the Beginning of the War), Karlsruhe Document Collection.

† The reader is also referred to the study by General der Flieger (Ret.) Werner Kreipe, Col. (Ret.) Rudolf Koester, and Capt. (Ret.) Karl Gundelach entitled "Die Ausbildung in der deutschen Luftwaffe" (The Training in the German Air Force), Karlsruhe Document Collection.

These measures did not have a chance to become effective before the war, but they did result in making available to the Luftwaffe about 1,000 pilots with twin-engine training, who were ready for assignment to more specialized schools. Many of the Luftwaffe units which were activated shortly before the war had not achieved an advanced level of training by the time combat operations began. Most of the younger pilots in these units lacked experience in night flying and flying in inclement weather, were deficient in bombing training, and in air-to-air and air-to-ground firing. But the standards of training in the older units also left something to be desired, chiefly because they so often had to give up their well-trained cadres to form the nuclei for new organizations.

According to statistics of the Office of the Quartermaster General, as of 2 September 1939 the Luftwaffe was short 61 tactical reconnaissance aircrews, 11 strategic reconnaissance aircrews, 139 single-engine fighter pilots, 54 twin-engine fighter crews, 36 dive-bomber crews, and 111 regular bomber crews.²² To make matters worse, there were also no reserve crews available from which to make up the losses which began to occur in the early part of the war. However, flak and signal units were able to fulfill their training missions and to keep pace with the activation of new units without too much trouble.

As was previously mentioned, the Luftwaffe carried out no systematic preparation for armament activity prior to the war, and took no preliminary steps to permit the immediate conversion of the German aircraft industry from a peacetime basis to a war production footing, to make sure that plant capacities would be exploited fully,* or to provide an adequate labor reserve against the day when a large part of the male labor force was bound to be conscripted.

* See the commentary of Diplom-Ingenieur Eberhardt Schmidt, former Technical Director of the Messerschmitt Company, in his article, "Grundlage und Wandlungen in der deutschen Flugzeugindustrie in den Jahren 1933-45," Flugwehr und Technik ("Fundamental Basis and Changes in the German Aircraft Industry during the Years from 1933 to 1945," Military Aviation and Technology), Vol. 2, Zuerich: February 1947.

The Military and Political Roles of the
Luftwaffe Before the War

The Luftwaffe as an Instrument of Political Policy

In 1933, Germany's political situation was highly unstable and clearly uncertain. Europe viewed Germany with a good deal of distrust, and it was imperative that Hitler acquire as soon as possible a reliable weapon which was capable of inspiring respect abroad and which would embody a warning to any foreign power that might be inclined to interfere with the Reich.* Because of the length of time required for the Army and the Navy to rearm adequately, these branches of service could not satisfy the need, but the Luftwaffe (assisted, to be sure, by a certain amount of deception) presented a distinct possibility. The fact that its build-up had to start almost from scratch soon gave Germany an advantage over her neighbors, for the new Luftwaffe would have up-to-date aircraft at its disposal, while a great part of the ample, but rapidly aging, equipment of the rest of Europe's air forces would be of little worth.

Soon after the announcement of the existence of the Luftwaffe as an independent branch of the Wehrmacht -- which naturally ended the secrecy which had shrouded its build-up -- one of the first steps taken by German air leaders was to represent the German Air Force as a considerably larger and more powerful body than it actually was at the time. In this way the Reich successfully frustrated an agreement which had been suggested during an Anglo-French conference in London on 3 February 1935, stipulating that the German air forces should be restricted to one-third as many aircraft as the British Royal Air Force had.

During the rather critical weeks following Germany's rearmament announcement it was a great help to Hitler to be able to inform the British negotiators, Sir John Simon and Lord Privy Seal Anthony Eden (whom Hitler met in Berlin on 26 March 1935) that the German Luftwaffe had already reached the strength of the Royal Air Force.† There was no longer any danger of Germany being ordered to cut down on air armament.

* The risk (Risiko) Luftwaffe. See p.78.

† The German figures included the aircraft assigned to flying units, schools, and supply and procurement offices.

The tendency to exaggerate the strength of the Luftwaffe was also given impetus by the personality of its Commander in Chief, Hermann Goering. As Commander in Chief, Goering managed to create an impression of trustworthiness and disarming honesty. He spoke continually of the fact that the German people were becoming a nation of "flying enthusiasts." Again and again Goering and his deputy, State Secretary Milch, pointed to the prowess of the Luftwaffe in greatly magnified terms. In order to make this prowess seem plausible abroad, flying schools, Luftwaffe branch schools, and the supply and procurement offices were all given uniform designations as Luftwaffe Groups and their locations announced openly. The branch school designations contained the symbol "S" and the supply and procurement offices the symbol "Z." Thus, the Air Group (Z) Jueterbog meant the supply and procurement office at Jueterbog and the Air Group (S) Tutow, the Bomber School at Tutow. No changes were made in the tasks assigned to the newly designated agencies.

When Goering made his famous speech of 10 March 1935 revealing the existence of the Luftwaffe, he informed the British journalist Ward Price that he was unable to quote precise figures, but that the strength of the German air forces in comparison with the strength of the air forces of other European nations had been based on the fact that Germany, by virtue of its position in the middle of Europe, was presumably in greater danger of air attack than other nations.

The fact was, that at that time the strength of the new Luftwaffe amounted to no more than five reconnaissance squadrons, one and one third fighter groups, and two bomber groups. The Luftwaffe was then in the process of activating seven reconnaissance squadrons, one and one third fighter groups, four bomber groups, and a number of naval air squadrons.

After June 1936 the Luftwaffe openly utilized the formerly secret three-digit numbering designations of the units, and flying schools and supply and procurement offices were also publicly acknowledged in this way. Quite apart from this numbering system, which clearly made a significant impression abroad, the subsequent transfers of units and divisions of units for the purpose of new activations created such a furor of activity that foreign observers were bound to conclude that the new German air arm was growing by leaps and bounds. As General Heinz J. Rieckhoff says:

It is no wonder, in view of the methods employed, that foreign military observers gradually came to the conclusion that a tremendously powerful air force was coming into existence in Germany.²³

This was augmented by the powerful impression which the new German Luftwaffe's installations were bound to make upon foreign military attachés and other official visitors, for no attempt had been made to economize in this respect. On the contrary, a great deal of money and materiel had been and was being expended in the construction of modern, well-designed airfields. And, if the external appurtenances were so impressive, the visitor was bound to reason that the force itself must be even more impressive. The time when German military leaders had anticipated inspection visits by Allied officers with some foreboding was long since past. Now, the more visitors the better, and the higher the rank or the more brilliant the reputation of the visitor the more eagerly he was welcomed! Men like the American Col. Charles A. Lindbergh or the Chief of the French Air Force General Staff, General Joseph Vuillemin, were extremely welcome and led to believe that a good deal more advanced aviation equipment and aircraft existed in Germany than was actually the case.*

* Generalleutnant Heinz J. Rieckhoff commented, "Naturally we were aware of the fact that these officers were expected to furnish their espionage chiefs with reports, which were forwarded through diplomatic channels without being censored by German authorities, and . . . would, . . . ultimately reach the top government circles of all the major powers. On the other hand, these foreign officers were presumably unaware of the fact that their German hosts deliberately kept them from seeing Germany's top achievements. . . . In addition to the systematic bluff organized at top level, there was also the willing self-deception of the foreign air observers, who simply refused to believe what their eyes saw and insisted on assuming that there was still more hidden behind it. They had no way of knowing that many of the gigantic hangars they were shown were either completely empty or filled with ancient, dust-covered aircraft. . . ." See Trumpf oder Bluff? 12 Jahre Deutsche Luftwaffe (Trump or Bluff? 12 Years of German Air Force), Geneva: Verlag Inter-avia, 1945, p. 157.

By this time, however, the Luftwaffe had really become a factor to be reckoned with. After Col. Lindbergh departed from Germany he became a warm friend of the Reich, and even during the early part of the war did his best to influence public opinion in the United States in favor of continued peaceful relations with Germany.* But Vuillemin, the sharp critic whose attitude toward Germany was anything but friendly, reacted differently.²⁴ He was undoubtedly impressed during his visit to the Heinkel Works in Oranienburg on 26 August 1938, during which time the He-100 fighter was demonstrated to him. This aircraft had been made up in three test models, but never reached the mass production stage. When this speedy plane landed, it rolled to a stop near the group of visiting French officers accompanied by Milch and Udet. One of the French officers suddenly cried out in pain as he stood too close to the He-100 and burned his hand by touching the still hot metal of the fuselage of the He-100. Milch then asked the pre-arranged cue question concerning

* Editor's Note: Prof. Ernst Heinkel, among others who were close to Lindbergh during his visit to Germany, disagrees with the view presented by the author. Heinkel writes, "How little feeling there was between Goering and Lindbergh was clear to me on the next day, . . . Goering was naturally invited to the reception. He arrived late without offering an excuse. He unceremoniously handed Lindbergh a decoration, in passing so to speak, . . . Goering thrust the little case forward and said with the bluntness characteristic of him, 'From the Fuehrer,' and then turned to the American Ambassador and to the American Military Attaché, Truman Smith. Lindbergh looked strangely at Goering, shook his head, and shoved the decoration into his trousers pocket like a handkerchief, without casting a glance around." Sturmische Leben (Stormy Life), Stuttgart: Mundus Verlag, 1953, pp. 351-352. To this day Lindbergh remains a controversial figure because he advocated non-involvement and absolute neutrality concerning the European war, because of his association with the "America-First" movement, and because of his frank appraisals of Allied air strength vis-a-vis the Luftwaffe. Those hostile to Lindbergh claimed he had received a German military war decoration (Iron Cross), that he favored Nazi policies in general and anti-Semitism in particular, and was a dangerous security risk. None of these charges were established, and Lindbergh later rendered conspicuous service in the Pacific during World War II, flying 50 missions and even (although unofficially) shooting down two Japanese "Zeros." See The Airman, Vol. VII. No. 2, February 1963, Washington: U.S. Government Printing Office, p.12.

what the situation was with respect to the mass production of the He-100. Udet thereupon replied that the second assembly line run had already been started and that the third run would begin within the next two weeks. Vuillemin was deeply impressed. Even before this, during an inspection visit to a number of aircraft hangars, when every attempt had been made to show him Germany's war preparations in detail, he had exclaimed, "I am amazed!"²⁵ A report by the French Ambassador to Germany, André Francois-Poncet, concerning this inspection visit mentioned that Vuillemin had been invited to visit Germany by Goering in the month of August 1938. He described Vuillemin's visit as follows:

He was given a hearty welcome. He was shown the newest models, the troop drill areas, the workshops and factories, and the air raid shelters. No attempt was made to hide anything from him, and he was able to confirm that the reports which I had been sending him for months were entirely accurate. After a farewell breakfast at Karinhall, Goering asked him a question pertaining to the future, "What would France do in the case of a war between Germany and Czechoslovakia?" The General answered, "France will keep the promise which she has given." But, in the automobile which subsequently took us back to Berlin, he confided to me, "If war breaks out at the end of September, as you think it will, there won't be a single French aircraft left after fourteen days!"²⁶

The Role of the Luftwaffe in the Pre-War Crises

It is understandable that the emerging Luftwaffe played no role at all in the deliberations of the general staffs of Europe during the crises of the mid-1930's. This was true of the German reoccupation of the Rhineland in March of 1936, although Luftwaffe strength had by then increased so that the few air forces utilized in this operation represented only a fraction of the actual available German air power. During this tension-filled movement, as well as in the subsequent action in Spain (1936-39), the general staffs of only two Western powers took any notice of the German Luftwaffe, and even these viewed it as

* See figure 33.



Figure 33

French Officers visiting Fighter Wing
"Richthofen" in Doeberitz, 1938: L. to
R.: (standing) General Joseph Vuellemmin,
Chief of Staff of the French Air Force;
the German State Secretary of Aviation,
Erhard Milch; and General of the French
Air Force, D'Astier.

a force whose strength could not be accurately assessed and must, therefore, be overrated. Nevertheless, it would not be far wrong to accept the cautious evaluation of General Maurice Gamelin, Chief of the French General Staff, who believed that Luftwaffe strength, even at that time, was not unduly influenced by the general tendency toward exaggeration.

The effect of these inflated reports was even greater in the case of smaller nations, as evidenced by the situation in Austria. It was not a mere accident, nor could it be attributed to the martial expression of General der Flieger Hugo Sperrle, that Hitler kept the latter near him during the luncheon given on 12 February 1938 on the Obersalzburg to commemorate the visit of the Austrian Chancellor, Dr. Kurt Schuschnigg. For Sperrle, in reality a good-hearted man despite the brutality and harshness of his features, represented the German Luftwaffe, a force which was already a tangible factor in military planning and was capable of inspiring respect and fear. Shortly after Schuschnigg's visit the German Army and Luftwaffe gave demonstrations along the Bavarian-Austrian border to underline the importance of the agreements reached at Berchtesgaden.* During the critical days following Schuschnigg's announcement in Innsbruck that a plebiscite would be held and until his final resignation on 11 March 1938 (and even in the hours immediately following) these demonstrations were repeated.

Doubtless the annexation of Austria was greatly facilitated by the Luftwaffe, which was by this time fairly strong and appeared to be even more powerful than it was. Of course, large numbers of impressionable Austrians were enthusiastic about the Luftwaffe, which they viewed as a symbol of Germany's strength. At this juncture, and to an even greater degree than was true elsewhere, France finally realized that the Luftwaffe had become a factor with which to be reckoned. France had been the leading nation in Europe since the Versailles Treaty, but Vuillemin,

* The Austrian government was not deceived by these demonstrations. See Ludwig Eichstaedt, Von Dollfuss zu Hitler (From Dollfuss to Hitler), Mainz: 1955, p. 209. The agreements mentioned above effectively removed the last organized opposition to Hitler in Austria. In the plebiscite held on 10 April 1938, 99.75 percent voted to become Germans.

who on 26 August 1938 had been so impressed by his inspection trip to German air installations, submitted a report to his government stating that the German Luftwaffe is "so vastly superior to the French Air Force that, for this reason alone, the French Army must reckon with a defeat. The German Reich produces between 500 and 600 aircraft per month, while France produces only seventy."²⁷ According to the writer Fritz Hesse, this report was the main reason why France refrained from intervening in the Czechoslovakian crisis.

As a last example of the political effectiveness which the Luftwaffe managed to exercise without going into action, one should consider Goering's threat to the Czech President, Dr. Emil Hacha. During the night of 14 March 1939, Dr. Hacha was faced with the German ultimatum to approve the secession of Slovakia and the incorporation of Bohemia and Moravia into the Reich as a German protectorate. Although Hacha had long refused to accede to German demands, Goering forced him to agree by declaring that, in the case Czech resistance was offered to the planned German occupation, the Luftwaffe would bomb the city of Prague.*²⁸

On the whole this intimidation was the last successful effort to use the Luftwaffe as an instrument of political policy. In Europe events were rapidly coming to a head. Great Britain had forged ahead in the field of air armaments and felt strong enough to influence France to follow suit, although the latter continued to hesitate. The spectre of German strength had made a deep impression upon the French mentality. On 10 September 1939, after both Britain and France had become embroiled in the conflict,[†] Chamberlain noted in his diary, "The efforts of France to postpone an official declaration of war as long as possible

* Editor's Note: President Hacha had been summoned to Berlin by Hitler, where he was subjected to the most incredible type of verbal abuse and pressures. Hitler actually threatened far more than the bombing of Prague. See Alan Bullock, Hitler, A Study in Tyranny, rev. ed., New York: Harper and Brothers, 1961, pp. 429-431.

† Editor's Note: Great Britain and France declared war on Germany on 3 September 1939.

until the French women and children could be evacuated played an important role in the final, time-consuming agonies preceding the declaration of war."²⁹ This was a clear indication of the general fear which prevailed in France with respect to the striking power of the Luftwaffe.

Year after year the German Air Force had provided valuable assistance in helping Germany to achieve its political goals, first of all because its very existence discouraged desires to interfere with German activities in foreign countries, and secondly, because the highly exaggerated ideas concerning the actual strength of the Luftwaffe facilitated peaceful settlements of the 1938 crises. But, at the same time, its largely propagandistic role in the events of the time were not without grave dangers. A military leader who consistently and arrogantly magnifies the strength of his forces -- Goering once bragged that the skies over London would "grow dark" when the Luftwaffe began its attacks -- runs the risk of gradually coming to believe his own propaganda. As the war was to reveal, this is precisely what happened to Hermann Goering, and which was to lead to the defeat of the Luftwaffe.

FOOTNOTES

Chapter 1

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APPENDIX I

BIOGRAPHICAL SECTION

(Soviet) General Yakov Ivanovich Alksnis

Born in 1897 in Livonia; Ensign in Russian Imperial Army; joined Bolshevik Party 1916; served on Soldiers' Committee on Western Front (German-Russian) in World War I. In 1919 joined command staff of Red Army and fought in civil war as a Military Commissar; completed Soviet Military Academy in 1924 and the School of Military Aviation, 1931. Commander in Chief of Red Air Force, 1931-38. Close associate of Tukhachevsky; arrested 1937; disappeared. Said to have died in 1940.

General der Flakartillerie Walter von Arthelm

Born 1893 in Bavaria; served in the field artillery in World War I; transferred to antiaircraft artillery arm after the war; by 1931 was a General Staff officer in the Reichswehr Ministry in Berlin. Became member of the Luftwaffe and Inspector of Flak Artillery in the Air Ministry, 1 April 1935. During World War II became the most prominent flak artillery officer in the Luftwaffe. Promotion dates of significance: Colonel, 1 February 1939; Generalmajor, 28 May 1940; Generalleutnant, 1 October 1942; General der Flakartillerie, 1 April 1944.

Generalmajor Gerhard Bassenge

Born 1897; entered the Army in 1914; served in Field Flying Forces in World War I. Later served in Army Ordnance Office, with special duty with Dornier firm. Transferred in 1934 to Luftwaffe and served with Reichs Air Ministry as Group Chief in the Technical Office. Later commanded Flying Group Stendal, and by 1938 was Inspector of Paratroops. Chief of Staff of Air Administrative Area XVII (1 June 1939); of the Fifth Air Fleet (July 1940); of Luftwaffe Mission Rumania (October 1940); and in October 1942 became Liaison Officer of the Fourth Air Fleet for the Royal Rumanian Air Force. He later commanded the Second Air Fleet, and on 22 February 1943 took charge of Bizerte-Tunis Defense Forces until captured, 10 May 1943.

Lt. Colonel Werner Baumbach

Entered the Luftwaffe, 1936; commissioned, 1938; served with 30th Bomber Wing in Poland and France; Commander of Bomber Wing, June 1942; in August 1942 became only German bomber pilot to receive the Oak Leaf and Swords to the Knight's Cross of the Iron Cross. Later worked with remote-controlled bombs in collaboration with Dr. Speer. After the war published a book on the Luftwaffe entitled Zu Spaet? (Too Late?).

Colonel Nicolaus von Below

Born in 1907; commissioned in German Infantry, 1 October 1932; transferred to the Luftwaffe, 1 October 1933. Underwent pilot training, 1933-36; Squadron Commander in Fighter Wing "Richthofen," 12 March 1936 to 15 June 1937; then served as Luftwaffe Adjutant to Hitler from 16 June 1937 to 29 April 1945, attaining rank of Colonel, 1 March 1944. Left the Fuehrer's bunker in Berlin 29-30 April 1945 and remained at large until found in January 1946.

Captain Dr. Ing. e.h. Ernst Brandenburg

One of central figures in German aviation, with a brilliant record as a bomber pilot and air commander in World War I; won Pour le Mérite. After the war remained active in air activities as far as possible within limits of Versailles Treaty; Ministerial Director of Aviation Branch, Reichs Traffic Ministry (1920-1933), where his great organizational ability, energy, and foresight helped to lay the groundwork for German military and commercial aviation. Assumed direction of the Motor Transport and Highways Branch, Reichs Traffic Ministry (1933), and a seat on the Board of Directors of Lufthansa. Awarded an honorary doctorate from the Technical College of Berlin for his aviation achievements.

Reichs War Minister, Field Marshal Werner von Blomberg

Graduate of the War Academy, 1907; served on Great General Staff in World War I; won Pour le Mérite; commanded 5th Division (1921-25); Chief of Branch III, Reichswehr Ministry (1925-27); Chief of Troop Office (1927-35); War Minister (1935-38); promoted to Field Marshal, 1936. The British said of him, "towers physically and mentally above most German generals. A leader of men, with great personal charm of character and manner. . . .but can be a stern critic and drives home his point well. . . . Much broader and more objective than most German officers, and a better

soldier even than von Hammerstein, having far more energy, quickness, and decision. . . .He is generally regarded as the most able soldier in Germany." Dismissed from the Army at Hitler's behest on 4 February 1938; arrested by the Allies in 1945; died in Allied custody, 14 March 1946.

General der Flieger Paul Deichmann

Infantry officer and aerial observer in World War I; later Reichswehr officer; transferred to Reichs Air Ministry as technical advisor, 1934. In World War II served as Chief of Staff, II Air Corps, in the West and later in Russia; as Chief of Staff of Wehrmacht Command South under Field Marshal Kesselring, (June 1942 - August 1942); subsequently held other important Luftwaffe posts, including command of IV Air Administrative Command (Austria). A Knight's Cross winner, Deichmann lent invaluable assistance to the USAF Historical Division's GAF Monograph Project in Karlsruhe as well as to the Fuehrungsakademie of the Bundeswehr. In 1964 he became the first foreigner to be awarded the USAF Air University Award.

Generalleutnant Kurt von Doering

Born in 1889 in Pomerania; served in Fighter Squadron 10 of the famous "Richthofen" Wing; later served in the Reichswehr. During World War II held the following positions: Commander of Fighter Command 2 of the Second Air Fleet (1939-40); Inspector of Fighter & Ground Attack Aircraft (1940); Commander of the Night Fighter Division (1941); Commander of 1st Fighter Division (1942); Office Chief of Central Division, Reichs Air Ministry (1944-45). Von Doering was promoted to Generalleutnant, 1 October 1941.

Professor Dr. e.h. Claude Dornier

German aircraft designer and manufacturer of international repute. Graduated from Munich Institute of Technology (1907); became associated with work of Count von Zeppelin; in 1910 became designer of lighter-than-air craft for Zeppelin Airship Co., Ltd. During World War I worked with Hirth firm building airships; was first to incorporate light metal alloys into steel frameworks. In 1922 formed his own company, Dornier Works, Ltd.; designed the Dornier "Whale" and "Super-Whale," and many other seaplanes and flying boats. His firm also made the Do-17, 217 bombers and developed the Do-335, the fastest piston-engine aircraft made during

World War II (but which never became operational). Moved to Switzerland (1947), headed up a number of firms in various countries, such as Oficinas Tecnicas Dornier in Madrid.

General der Flieger Karl Drum

Entered military service July 1913; served in World War I as company infantry officer and as a reconnaissance flyer; between wars was trained as a General Staff Officer. Held a number of technical and advisory posts, last of which was Chief of the Inspectorate of Air Reconnaissance Forces and Operations, Reichs Air Ministry. As a specialist in Army-Luftwaffe cooperation, began World War II as Chief of Staff to the Luftwaffe General with Commander in Chief, Army, and was Chief, Air Support Command, Army Group South (Russian Front), 1941-42. Thereafter served as Commander of Wehrmacht Forces in Holland; Commanding Officer, 11th Luftwaffe Field Division; and as head of several administrative commands, the last being Commanding General of Luftwaffe Administrative Area Western France. After the war, Drum contributed substantially to the GAF Monograph Project in Karlsruhe.

General der Flieger Hellmuth Felmy

One of Germany's "old eagles," Felmy was a flyer in 1912; commanded air units in World War I; played a leading role in the development of the new Luftwaffe and held important command posts. Worked in various clandestine aviation staffs within the Reichswehr (1920-33); commanded the aviation schools in Berlin (1933-35); in Munich (1935-36); served with VII Air Service Area Command; and from 1937-39 was with Second Air Fleet, Braunschweig. Retired, January 1940, he was recalled to active duty in May 1941 as Military Commander in Greece. Later served as Commanding General LXVIII Corps (1942-45), participating in events in Kalmyk Steppes, the Mius area, Greece, and Yugoslavia. After his release from prison in 1951, Felmy made valuable contributions to the USAF Historical Division's GAF Monograph Project.

General der Flieger Veit Fischer

Fischer was a veteran of World War I, having served in the Army. He was active in the development of the new Luftwaffe in the early 1930's and was promoted to Colonel, 20 April 1936. Prior to World War II he had attained the rank of Generalmajor,

and was promoted to Generalleutnant, 1 December 1940. Commanded the Staff for Special Duties in Air Administrative Commands I and II, respectively, (1941-42); also Headquarters, Air Administrative Command Moscow; Air Administrative Commands XXVII and VIII. Fischer was promoted to General der Flieger, 1 June 1942.

Reichsmarschall Hermann Wilhelm Goering

Credited with 20 aerial victories in World War I, Goering was the last commander of the famous "Richthofen" Fighter Wing No. 1. After the war he promoted aviation ventures in Germany and Sweden, avidly supporting the Nazi Party. He fled to Sweden after being wounded in Hitler's abortive "Putsch" in Munich in 1923; soon returned to Germany and became a leading political figure; became Minister President of Prussia, and later President of the Reichstag. Commander in Chief of the Luftwaffe and Reichs Minister of Aviation, he was promoted to Field Marshal (1938), and became Germany's only Reichsmarschall (19 July 1940). Removed from his post by Hitler, 23 April 1945, he only escaped a worse fate by the intervention of loyal Luftwaffe ground troops. Tried and sentenced to death in the main trials at Nuremberg, he took his own life by poison, 15 October 1946.

Field Marshal Robert Ritter von Greim

World War I flyer with 28 aerial victories; won Pour le Mérite and a hereditary title from the King of Bavaria; helped organize Chiang Kai-Shek's Chinese Air Force in the 1920's; one of main organizers of German Commercial Flying School, Wuerzburg. Reentered German Air Force as Commander, Fighter Wing No. 1 (1934); became Commander of Air Division 5 (1939). During World War II he commanded V Air Corps (1940-43); Luftwaffe Command East (later redesignated Sixth Air Fleet), July 1943. Promoted to Field Marshal (25 April 1945), he was given Goering's post as Commander in Chief of the (then almost non-existent) Luftwaffe. A Knight's Cross winner; committed suicide in 1945, shortly after capture by American forces.

Generalleutnant Johann Hesse

Born 1878; German infantry general; had outstanding World War I record, winning Pour le Mérite with Oak Leaf, Bavarian Max-Josefs Order, etc.; active in the Reichswehr after 1918; influential in assisting the formation of the Aviation Branch

of the Reichswehr Ministry. Promoted to Generalleutnant 1 February 1926, he commanded the 3rd Division, and Military Service Area Command III.

Professor Dr. Ing. Ernst Heinkel

Born 1888; educated Stuttgart Institute of Technology; designer of aircraft (1910-11); chief constructor and engineer for Albatros firm (1913); chief construction engineer, technical director with Hansa and Brandenburg Aircraft (1914); built 30 different types of aircraft for Austrian Army, Navy during World War I. Founded Ernst Heinkel Aircraft Works, Warnemuende (1922), and later firms at Rostock and Oranienburg. Designed and built 100 aircraft types by May 1945. His aircraft held numerous speed and distance records, and his firm built world's first rocket-powered aircraft (1938), and first jet aircraft (1939). Following World War II (1950) established the Ernst Heinkel Co. for manufacture of trucks, scooters, etc. at Stuttgart-Zuffenhausen. Winner of National Prize for Art and Science.

Reichs President, Field Marshal Paul von Hindenburg und Beneckendorff

Born in Posen in 1847; entered Prussian Cadet School (1858); fought in Danish War (1864); Austro-Prussian War (1866); and Franco-Prussian War (1870-71); retired in 1911. Recalled to active duty 22 August 1914, commanded forces in East Prussia in victorious Battle of Tannenberg (September 3-4, 1914); promoted to Field Marshal. Later commanded forces on the Eastern Front and then all forces on the Western Front. Emerged as leading military figure in Germany after World War I; elected Reichs President (1925), he allowed the Republican government to continue without much interference, although he was a devoted Monarchist at heart. Initially reluctant to name Hitler Chancellor -- he called him the "Bohemian Corporal" -- he was persuaded in his senility to do so in January 1933. His death, 2 August 1934, opened the way for Hitler's assumption of absolute control in Germany.

General der Kavallerie Ernst von Hoeppner

Born in 1860; educated in the Main Cadet School; began active service in the 6th Dragoon Regiment at Stendal. He attended the War Academy in Berlin and then served as Squadron Commander, 14th Dragoons in Colmar (1893-1901); on the Great General Staff (1902-05); as Commander, 13th Hussars in Diedenhofen (1906-7); Chief of Staff, VII Corps (1908-12); and from 1912 to 1914 as Commander, 14th Cavalry Brigade, Bromberg. In World War I he was Chief of Staff, Third Army (1914-15); Commander, 14th Reserve Division (1915); Chief of Staff, Second Army and Commander, 75th Reserve Division (Eastern Front) in late 1915 and early 1916; and was appointed in 1916 as Germany's first Commanding General of Air Forces. He was raised to the nobility in 1913, and awarded the Pour le Mérite for his outstanding work as an air force commander. His book, Germany's War in the Air (Deutschlands Krieg in der Luft) is one of the great aviation stories of World War I. Hoeppner died 25 September 1922.

Generalleutnant Hans Jeschonnek

Served in World War I and in the Reichswehr between the wars, promoting all aviation groups. Transferred to the Luftwaffe as a Captain (1933); by 1939 was Chief of the Luftwaffe General Staff. Although a protégé of General Wever, Jeschonnek remained basically an opponent of strategic air power; differed at times with Goering, and sometimes even with Hitler, whom he considered to be a genius; his appointment as Chief of the General Staff of the Luftwaffe represents the first clear break with the older traditions of the Reichswehr. The circumstances surrounding his suicide (19 August 1943) provide an interesting insight into command and policy problems in the Luftwaffe and the personality of Jeschonnek himself.

Professor Dr. Hugo Junkers

World famous aircraft designer and manufacturer and a pioneer in all-metal construction and in commercial aviation. By 1910 Junkers had registered many patents, and in 1914 built one of the first wind tunnels to test model aircraft. During World War I worked on armored aircraft. At his Dessau plant he produced the F-13 (1919), the first true commercial transport aircraft and forerunner of the Ju-52. A pacifist by nature, he was urged into constructing a plant at Fili, near Moscow, in 1923, on the

ground that his aircraft were vital to Germany's "defenses." About 1930 the Nazis began a program of intimidation and blackmail against Junkers which did not abate until his death. Forced to the brink of financial ruin (largely the work of Goering and Milch), he was systematically deprived of his airline, his fortune, his firm, and his patents. Although seriously ill, Junkers continued to defy the Nazi regime, and only escaped the false charge of treason by his death, 3 February 1935. A controversial figure, Junkers' character and motives now appear to have been above question.

Field Marshal Wilhelm Keitel

Served before and during World War I, mostly in the artillery; remained in service in the Reichswehr, holding a number of command and staff posts, notable among which was that of Branch Chief of T 2 in the Reichswehr Ministry (1929-33) and Chief of the Army Ordnance Office (1935-39). Served as Chief of the High Command of the Wehrmacht (September 1939-May 1945). Hitler found him useful in that he could rely upon him to follow "his master's bidding" in keeping the old Reichswehr officers in line. A "yes man," he was not held in high esteem by the professional officer corps. Tried and convicted at Nuremberg and executed 16 October 1946.

Field Marshal Albert Kesselring

Doubtless the best known Luftwaffe combat commander to Americans, he served in World War I and in the Reichswehr after the war. Transferred to the Luftwaffe (October 1933); promoted to general (1934); Generalleutnant (1 April 1936); Chief of the General Staff of the Luftwaffe (1936-37); Commander, Air Service Area III, Dresden (1937); Commander, Luftwaffe Group 1, Berlin (1938); Commander, First Air Fleet (1938-39); Commander, Second Air Fleet (1940-43); Commander of Army Group "C" and German Forces in Italy, as well as Defensive Forces in the West and South (July 1943-10 March 1945). Kesselring rendered great assistance to the USAF Historical Division's GAF Monograph Project in Karlsruhe. Died 16 July 1960.

(1919-1936). Commanded 3rd Group, Bomber Wing "General Wever" (1936-37); served as Chief of Staff Air Administrative Command III, Chief of Staff, Air Administrative Command VII (1938-summer of 1944); thereafter with Luftwaffe Mission Rumania and the Office of the Commander in Chief of the Luftwaffe. Hospitalized late in 1944 and saw no further action or service. Maass wrote a number of essays and historical papers for the GAF Monograph Project in Karlsruhe.

General der Luftnachrichtentruppe Wolfgang Martini

Served in the First World War in the Army Signal Forces; a key signals officer in the Reichswehr after the war; saw action on Germany's eastern border against Polish incursions (1919); established himself as the Army's top signals officer (1920's). Transferred to the Luftwaffe and headed the Air Signals Branch (1934); trained as pilot and observer; Generalmajor (1938); Generalleutnant (1940); he became one of the Luftwaffe's most valuable chiefs. Promoted in 1941 to General der Luftnachrichtentruppe, commanding all Luftwaffe Signals Forces, and in 1944 to the post of Inspector of Air Inspectorate 7, Luftwaffe High Command. Winner of Knight's Cross of the War Service Cross with Swords.

Professor Dr. e.H. Willy Messerschmitt

Born in 1898; educated at the Munich Institute of Technology; associated with glider development (1912-23); development of high performance sport and transport aircraft (1923-27); chief designer and co-owner of Bavarian Aircraft Works, which later became known as Messerschmitt AG, Augsburg (1927-45). One of Germany's top military aircraft designers, he designed the Me-109, which held the land plane speed record (1937) and world absolute speed record (1939); designed the jet fighter Me-262 and others. A favorite of the German Air Ministry and High Command, Messerschmitt reestablished his commercial enterprises between 1945 and 1954, traveled extensively, and has remained active in technical developments in a number of fields. Holder of Knight's Cross of the War Service Cross and German National Prize for Art and Science.

(Soviet) Colonel S. A. Mezheninov

Fought in the civil war against the "White Army" at the close of World War I; was active member of the Communist Party and the Soldiers' Councils; became a specialist in aviation, particularly air operations. Chief of Operations, Red Air Force (1928-33 or possibly longer); wrote a book entitled, Air Forces in War and Operations, published in 1927. Mezheninov was one of the leading Soviet officers who dealt with Reichswehr air officers during the time when German airmen were secretly training in the Soviet Union.

Field Marshal Erhard Milch

Milch served during World War I as a member of Fighter Group 6. After the war he left the service and entered private aviation business, becoming associated with Lufthansa (German airlines). Appointed State Secretary of Aviation with the rank of Colonel in the Luftwaffe (February 1933), he was not looked upon with pleasure by older professionals who had worked their way up and remained in service. Promoted to Field Marshal, 19 July 1940. A competent technical officer with great talents in this field, a man of boundless energy, who also had the ability to make bitter enemies. Milch was the number two man in German aviation and in the Luftwaffe until his dismissal by Hitler over the use of jet aircraft. He now lives in retirement in southern Germany.

Generalleutnant Hilmar Ritter von Mittelberger

Born 1878 in Bavaria; served in World War I in the infantry; knighted by the King of Bavaria, received other high decorations. After the war served in the Reichswehr; Colonel (1 February 1927); Generalmajor (1930); Chief of the Aviation Branch of the Reichswehr in the late 1920's and early 30's; Generalleutnant (1 January 1932). Retired prior to World War II; may have served briefly in the early part of World War II. A leader of considerable ability.

Generalleutnant Professor Dr. Oscar Ritter von Niedermayer

A Bavarian, born in 1885; speaking ability in 8 languages. Entered the Army Artillery (15 July 1905); served as General Staff officer in World War I; knighted for his service, served

General der Flieger Karl Kitzinger

Served on both Eastern and Western Fronts in the infantry, World War I; after the war served in Reichswehr; Major (1 March 1927) and staff officer in 5th Division (1928-30); took flying training and transferred to the Luftwaffe (1 January 1934) with rank of colonel. Promoted to Generalmajor (1 April 1936); Supreme Commander of Air Defense (1938-40); Commander of Luftwaffe Forces in Norway (1940-41); Commander in Chief of Forces in the Ukraine (1941-43); Commander in Chief France and the West Wall (1944-45). Promoted to General der Flieger, 1 October 1939.

Generalmajor Fritz Loeb

Born in Berlin, 1895; entered the service in 1913; served in World War I as junior officer in Army Engineers. After the war served in the Reichswehr; Rittmeister (1 February 1926); in 9th (Prussian) Cavalry Regiment in late 1920's while taking an active part in German military aviation activities. Transferred to the Luftwaffe (1934); Colonel (1 December 1936); Generalmajor (1 February 1938); Loeb was Chief of the Luftwaffe Administration Office (1939); Commander of Luftwaffe Administrative Area Belgium (1940); and was killed in an aircraft collision while landing at Brussels-Evere, 22 June 1940.

Generalstabsingenieur Rolf Lueht

Entered the German Navy, 1924, after graduation from the Berlin Technical College in engineering; took pilot training (1926) and flew in Navy air forces until 1934, when he transferred to the Luftwaffe. Just prior to World War II was promoted to Fliegerchefingenieur and appointed Chief Engineer, Department of Director General of Luftwaffe Equipment. On 1 August 1940 he was promoted to Generalstabsingenieur. Involved in investigation of Technical Office. Retired with pension, 1 January 1943. Thereafter worked as Manager of Messerschmitt Works at Regensburg. Killed in action in Germany, 1945.

Generalleutnant Bruno Maass

Began his military career with 2nd Hussars in 1911; served in flying forces in World War I; and served in Reichswehr after 1918. Served in the 9th Cavalry Regiment, Military Service Area Command III, and in aviation activities in the Reichswehr Ministry

in Epp's Freikorps (1919). Then served in Motor Bn 23 (1919-20); Reichswehr Ministry (1920-21); transferred to the Reserves (1921). From 1921-32 worked in various positions in connection with the Reichswehr. Returned to active duty as an (E) officer (1 May 1932); became inactive (31 January 1933); then again returned to active duty (1 November 1935). He became Director of the Institute for General Military Knowledge (October 1938); Director of General Language Knowledge, University of Berlin (1 September 1939); and later commanded the Infantry and Armored Schools; the 162nd Infantry Division; and in May 1944 East Troops No. 703 for Special Duties with the High Command, West. More of a scholar and a thinker than an aggressive commander or a natural leader, he was released from duty late in the war.

Generalleutnant Theodor Osterkamp

Flyer in German Imperial Navy, World War I, with 32 aerial victories winning Pour le Mérite; commander of a reconnaissance squadron with 1st Guards Division (Kurland) (1918-19); worked with naval agency on antiaircraft aiming techniques. Joined Luftwaffe (1933) as squadron leader, Fighter Wing "Richthofen"; later commanded group in Fighter Wing "Horst Wessel"; also directed 1st Fighter School, Werneuchen. In World War II, commanded 51st Fighter Wing in France; 2nd Fighter Command in Battle of Britain; and division in Second Air Fleet in 1941. Commander, Luftwaffe Administrative Command Africa (2 August 1941-1 August 1942); Generalleutnant and Chief of Luftwaffe Inspectorate for France (1 August 1942). Released from duty because of injuries sustained 31 December 1944. Knight's Cross winner.

Franz von Papen

Avowed Monarchist; service in Army before 1900; General Staff Officer and Military Attache to U. S. (1914-15); persona non grata (1915), returned to Germany. World War I service, Chief of Staff, 4th Turkish Army (Palestine). After war held seat in Prussian Landtag until 1932 as conservative member of (Catholic) Center Party; appointed Chancellor (1 June 1932) by Hindenburg; could not hold hostile elements of coalition together, largely because of Nazi pressures. Resigned (November 1932); taken into Hitler's government as Vice-Chancellor (January 1933); believed he could restrain Hitler and Nazis. Fell from favor, became Ambassador to Austria prior to Anschluss; became Ambassador to Turkey until August 1944 when Turkey broke off relations with

Germany. Acquitted at Nuremberg, he was sentenced by German denazification court. This decision not upheld, and he was freed (1949). A clever, smooth, but often ineffectual political figure, and an extremely controversial one.

Coleonel Edgar Petersen

Born in Strassburg, 1904; trained as technician and businessman in motor and machine industry. Began flying (1924); took further courses at Kassel, Schleissheim, Staaken; became flying instructor in Russia (1929-30); began military service in German infantry (1934). Soon transferred to aviation arm; became flying instructor 1935-37; officially transferred to Luftwaffe (1938); served in World War II with 10th Air Division (1939); Commander, 40th Bomber Wing (1940); won Knight's Cross (1940). Transferred to Luftwaffe Operations Staff (15 April 1941); Commander, Experimental Station at Rechlin (Mecklenburg), (1 October 1941 until war's end).

Generalmajor Diplom Ing. August Pfoch

Born 1894; aerial observer in World War I; served in Reichswehr after war; also studied engineering. Held various assignments in 1920's: battery commander of an artillery regiment (Potsdam), specialist for aviation in Army Ordnance Office under Wilhelm Wimmer. Served in Lipetsk; fluent in Russian language; transferred 1933 to Reichs Air Ministry as group commander; became wing commander; later succeeded Fritz Loeb, and was finally Chief of Staff to Ernst Udet, Chief of the Technical Office. Worked on the Armistice Commission in the demobilization of French Army (1941). Close friend of Udet, he was relieved of his office after some difficulty with State Secretary Milch (1 October 1941), sent to Air Administrative Command II. Retired after further trouble with Milch and investigation, 30 November 1942. Capable, and quite young for permanent retirement.

Generalleutnant Hermann Pfocher

Born in 1901; served in Infantry Regiment 126 in World War I; served in 13th (Wuerttemberg) Infantry Regiment between wars; took flying training in late 1920's; went to Russia for training (1928-29); remained active in Reichswehr. He graduated from the

War Academy (1935); transferred that year to the Luftwaffe General Staff (Organization Branch); went to Spain (1936); Chief of Staff, "Legion Condor" (1937-38); Chief of Plans and Mobilization, Luftwaffe General Staff (1939); Chief of General Staff, V Air Corps (5 May 1940-March 1941). He served as Chief of Staff, Luftwaffe Command East (1 April 1942-Autumn 1942), with command over 1st Air Division; was Commander, 19th Luftwaffe Field Division (France-Netherlands) from 1 February 1943 to July 1943; Chief of Staff, Third Air Fleet (1 July 1943); Commander, 6th Parachute Division (1 October 1944 to capitulation). Plocher was Assistant Control Officer of the USAF Historical Division's GAF Monograph Project in Karlsruhe (1953-57); returned to service as Deputy Inspector of the West German Air Force and Chief of the Luftwaffe Operations Staff (1 March 1957), and retired 31 December 1961.

Field Marshal Dr. Ing. Wolfram Freiherr von Richthofen

Cousin of the famous Baron Manfred von Richthofen, he also served in the famous Fighter Wing No. 1 in World War I, achieving 8 aerial victories. After the war served in the Reichswehr; during 1920's was one of the few officers to earn a doctorate in engineering; served in Spain with "Legion Condor," which he commanded (1938-39). During World War II he served in the Polish and French campaigns; became Commander of the VIII (Close Support) Air Corps (June 1941); assumed command of the Fourth Air Fleet (July 1942); promoted to Field Marshal (February 1943); took over the Second Air Fleet (1943). A Knight's Cross winner, he was once an enemy of dive-bombing, but later became one of its staunchest adherents, and carried out operations of this sort with great effectiveness in southern Russia. Died of a lingering illness in Austria, July 1945.

Generaloberst Guenther Ruedel

Entered the German Army, 1902; served as artillery officer in World War I; served after the war as artillery and antiaircraft artillery specialist in Reichswehr; Member of Troop Office (October 1928-1930); Inspector of Motorized Batteries and Commander of Artillery Training Staff (1930-33); Inspector of Air Defense Units (1 September 1933) concurrently with post of Chief of Air Defense Branch, Army Ordnance Office. A general in 1934, he was integrated, along with all flak forces, into the Reichs Air Ministry (1 April 1935); became Inspector of Flak Artillery

and Air Defense Units. Ruedel was made Chief of German Air Defense (1 February 1938); promoted to Generaloberst (1 November 1942). A Knight's Cross winner, he was one of Germany's leading flak specialists.

Reichs Chancellor, Generalmajor Kurt von Schleicher

Born 1882 in Brandenburg; entered 3rd Regiment of Foot Guards at Potsdam (1900); Captain (1913); served as General Staff officer in World War I; Assistant to General Groener, Quartermaster General (1918); in similar capacity in Reichswehr after the war. During crises of 1923-24 Aide to Generaloberst von Seeckt; appointed Chief of Armed Forces Branch, Reichswehr Ministry (1926); Colonel (1 March 1926); Generalmajor (1929). Continually at odds with Hitler; had frequent arguments with Bruening and Hindenburg. Helped to bring about the fall of Bruening and the appointment of von Papen as Chancellor in 1932. Schleicher, a master intriguer, became Reichswehr Minister, and, after the resignation of Papen (1 December 1932), Reichs Chancellor. In the final years of the Weimar Republic, v. Schleicher was the leading opposition figure to the Nazis. He sought to control the Nazi movement by controlling the Reichswehr as his own instrument. Seen by Hitler as the number one enemy of National Socialism, Schleicher and his wife were murdered in the night of the "long knives," 30 June 1934.

Generaloberst Hans von Seeckt

One of the most brilliant, energetic, and imaginative of the old school of German General Staff officers; responsible more than any other person for maintaining the quality of the Army after 1918 and in building the Reichswehr. Born in 1866; began his service with Kaiser Alexander Guards Grenadier Regiment; by 1897 was General Staff officer, Chief of Staff, III (Baden) Corps (1913). During World War I achieved reputation as Chief of Staff to Field Marshal August von Mackensen in the Southeastern Front. As Chief of the Troop Office after 1918, (a cover name for the General Staff), he organized the new Army, admonishing officers to remain "apolitical" and aloof from the State. This rule, prudent as it was in a time of great political turmoil, later had serious consequences. Seeckt died before Hitler had begun to undo his handiwork.

General der Flieger Hans-Georg von-Seidel

World War I veteran with General Staff experience; left the Army in 1920 as Captain of Cavalry. Returned to active duty in 1st (Prussian) Cavalry Regiment (1934); began aviation training and secured position on the Luftwaffe General Staff (1935); Generalmajor (1 September 1939). Promoted to General-leutnant (20 July 1940). At the opening of the Russo-German war was Quartermaster of the Luftwaffe and General der Flieger; was the foremost figure in the establishment of the Quartermaster Service of the Luftwaffe, a branch which bore the imprint of his capable leadership. His final assignment was as Commander, Tenth Air Fleet. After the war he contributed a number of first-rate papers and essays to the GAF Monograph Project in Karlsruhe.

Colonel (Director) Friedrich Wilhelm (Fritz) Siebel

Born in 1891; served during World War I as aircraft pilot and observer; opened his own aircraft construction firm in 1919. In 1922, following the signing of the Treaty of Rapallo, went to the Soviet Union as a representative of the German Foreign Office to arrange for the establishment of German aircraft factories in Russia. One of the founders of Klemm Light Aviation Construction Co., Ltd., he became well known both in Germany and on the war fronts as a specialist in Luftwaffe engineering projects during World War II. A tireless worker, Siebel designed the well-known "Siebel Ferries," which were so extensively used in the Kuban bridgehead area and elsewhere in the East. After World War II he reestablished his firm in Oberpfaffenhofen near Munich, and died in 1955.

General der Flieger Hans Siburg

Born 1893 in Saarburg, Alsace, Siburg joined the German Navy in 1912, served as a naval flyer, 1915-18 (a Russian POW, 1916-17, but escaped via Sweden), and served in the Navy after the war. Assigned to duty in the Technical Office, Reichs Air Ministry (1934); Commander of Naval Flying Training Schools (1934-36); studied flying training in the U.S.A. in 1934; transferred to the Luftwaffe as a wing commander (1936); served in Air Administrative Command VII (1937-38); in Polish campaign (1939); assigned to Inspectorate for Aerial Navigation, Reichs Air Ministry (1940); Commander of Air Administrative Area Command Holland

(1940-43); promoted to General der Flieger, 1 April 1942; and served finally in Berlin as Chief of the Luftwaffe Administrative Office (1943-45). Siburg was assigned to the Fuehrer Reserve, 1 April 1945.

Colonel Wilhelm Siegert

Born in Erfurt in 1872, Siegert was a pioneer German aviator and air leader. Entering the Army a decade before the turn of the century, he flew in 1910, and by 1914 had established several German air records. Before World War I he was in charge of the airfields at Metz, Strassburg, and Darmstadt, and in August 1914, was in command of the Air Battalion at Strassburg. He served ably during World War I, becoming Adjutant to General Headquarters XIV, while taking part in bombing operations; became Chief of Staff to the Commander of Field Flying Forces, Colonel Hermann von der Lieth-Thomsen; and finally served as Chief of Staff to General von Hoepfner, Commander of German Air Forces. Siegert, who understood the significance and use of air power, was one of the most highly respected of German aviation leaders. He remained active in this field until his death on 26 January 1929.

General der Flieger Wilhelm Speidel

Born in 1895; served from 1914 to 1929 in various capacities as a German infantry officer. In 1929 went to Washington to the German Embassy as forerunner to the Air Attaché. He became a specialist in organization of air forces, 1930-33, transferred to the Reichs Air Ministry in 1933, and until 1935 served in the Operations Branch. He then became a group commander in the 53rd Bomber Wing, in 1936 was Chief of Staff of Luftwaffe Administrative Area Command III, Dresden, and in 1938, Chief of Staff, First Air Fleet. In 1939 he became Chief of Staff, Second Air Fleet, and in October 1940, Chief of Luftwaffe Mission Rumania (which in 1941 included Bulgaria). Speidel was Military Commander of Southern Greece, 1942, Military Commander of Greece, 1943, Commander of the Liaison Staff for the Southeast of the Luftwaffe High Command, and in 1945 headed the Third Special Field Police. A brother of the well-known Dr. Hans Speidel, this officer played a key role in the development of Luftwaffe organization.

Field Marshal Hugo Sperrie

Born in 1885; joined Infantry Regt. 126 in 1903; aerial observer and commander of air units in World War I. In Freikorps Luettwitz (1919), Organization Branch (Air) in the Reichswehr Ministry (1925-28), and commanded an infantry battalion (1929-33). Commander, 8th Infantry Regiment (1933), he transferred in 1934 to the Luftwaffe as Commander of Flying Units in Air Service Area II, and was Commander, Air Service Area V (1935). In November 1936 he went to Spain as Commander of "Legion Condor," a post he held until 30 October 1937, when he returned to Germany. During World War II he commanded the Third Air Fleet and Luftwaffe Command West (1939-23 August 1944), when he was transferred to the reserves. Awarded the Knight's Cross, he was promoted to Field Marshal 19 July 1940. Tried and acquitted at Nuremberg, he died 2 April 1953.

Generaleoberst Kurt Student

Entered the Army in 1910 and served as an aviator in World War I. Served after the war in the Air Technical Branch of the Army Ordnance Office (1920-28), as an infantry commander (1928-31), visiting the Lipetsk (U.S.S.R.) airfield every year from 1924-28. He then served in the Air Defense Branch of the Reichswehr Ministry (1931-33), transferring in 1934 to the Luftwaffe as Commander of Air Armament Schools. Student commanded the Luftwaffe Experimental Station Rechlin (1935), was Chief of Staff of the Flying School Command (1936), Inspector of Flying Schools in Air Service Area IV (1937), and Commander of Paratroops and the 7th Air Division in 1938. During World War II he commanded the 7th Air Division in the West (1940), the XI Air Corps in Crete (May-June 1941), the Parachute Army at home and in the West (1942-October 1944), Army Group Student, redesignated 7 November 1944 Army Group "H", from October 1944 to 30 January 1945, Parachute Army West (16-28 April 1945), and Army Group Vistula until the capitulation. A Knight's Cross winner, he was promoted to Generaleoberst 13 July 1944. Student is one of the pioneers of paratroop and airborne operations, in which areas he distinguished himself.

Generaleoberst Hans-Juergen Stumpff

Generaleoberst Stumpff entered the military service before World War I, saw much war service during that conflict, and became a General Staff officer in the Reichswehr after the war. In 1933 he was transferred to the Luftwaffe as an administrative specialist, and became Chief of the Personnel Office, Reichs Air Ministry. From 1 June 1937 to 31 January 1939 he was Chief of the General Staff of the Luftwaffe. During the first part of 1940 he commanded the First Air Fleet. With his promotion to Generaleoberst, 11 May 1940, he took command of the Fifth Air Fleet (Norway and Finland) a post he held until 5 November 1943. He later commanded defense units of the Reich until the capitulation. He was primarily an Army man and an administrative expert, but was highly decorated in both wars for combat activities.

General der Infanterie Georg Thomas

Thomas began his service in 1908, served during World War I, and later in the "100,000 Man Army." By 1 September 1939 he had become Chief of the Economic and War Armaments Office of the High Command of the Wehrmacht. At the end of 1942 he was relieved of those duties pertaining specifically to the War Armaments Office, but continued as Chief of the War Economy Office. On 16 January 1943 he was also appointed General for Special Duties with the Chief of the High Command of the Wehrmacht (Keitel). On 15 August 1944 he was relieved of all active assignments by Field Marshal Keitel, who thought Thomas painted too pessimistic a picture of Germany's potential and the future course of the war. He remained in the reserves until the end of the war. He took ill and died in 1946 while in American custody.

General der Flieger Hermann von der Lieth-Thomsen

Born in 1867; entered the service in 1887, and was a flyer before World War I. From 1901-03 and from 1905-14 served as an officer in the Great General Staff. In early 1914 he was with the Inspectorate of Air and Motor Transport Services. Thomsen served in the Battle of Tannenberg, at Ypres, and most of the critical areas of the war. On 8 October 1916 he was made Chief of Staff to the Commanding General of Air Forces (Hoeppner), and later was Chief of Field Flying Forces. He was generally acknowledged as one of the most able leaders and organizers of German air forces. Winner of the Pour le Mérite. Left the

service after demobilization in 1919 and engaged in aviation activities in behalf of the German government at home and abroad. Although nearly blinded by a serious eye ailment from 1928-1933, he was appointed Generalmajor in the new Luftwaffe in 1935 and rose to become General der Flieger. His principal duty was that of an advisor at the High Command level.

Generaloberst Ernst Udet

An internationally famous stunt pilot and aviator, and one of Germany's top aces in World War I. As a flyer in Fighter Wing No. 1 under Baron Manfred von Richthofen he achieved 62 aerial victories, second only to the "Red Knight" himself. A Pour le Mérite winner, Udet then became a commercial and stunt flyer, traveling to Africa, Greenland, the United States, and other countries. In 1936 he was back in service as Chief of the Technical Office of the Luftwaffe, and a year later was Generalmajor. In 1938 he became Chief of the Office for Special Supply and Procurement, a position he held until his death. He did not understand the intricacies of political maneuvering and pressures, nor was he particularly talented in the field of development and production planning. His suicide on 17 November 1941 was obscured from the public as an "accident which occurred while testing a new type of aircraft."

Generalleutnant Walther Wever

Wever was in many respects the "Father of the Luftwaffe." A highly gifted organizer, temperamentally well suited to high command, he demonstrated his talents in World War I and in the Troop Office (a cover name for the General Staff) of the Reichswehr. Wever was the first Chief of the General Staff of the Luftwaffe, and held this position until his untimely death in 1936. Of a completely different mold than Goering, he saw clearly the future of air power, especially strategic air power, was keenly aware of the work of Douhet, but also remembered problems of defense which he considered in relation to future air warfare. He was able to inspire confidence, stifle discord, and promote harmony in his organization. No Luftwaffe commander who followed him could equal his performance in these areas. His favorite idea was the creation of a four-engine bomber force capable of flying beyond the Urals and back. This plane he called the "Ural Bomber." Some progress was made in this direction, but all plans were jettisoned after his death in an air accident, 3 June 1936. Had he lived, the Luftwaffe might have been a much more formidable organization.

Generalleutnant Helmut Wilberg

Born in 1880 in Berlin, Wilberg was a flyer before World War I, and served as commander of air units for the First and Fourth Armies during the war. He then served as Chief of the special air group (T-2) in the Reichswehr Ministry (1920-27); promoted to Lt. Colonel, 1 February 1926; Colonel, 1 October 1929; in 18th (Prussian) Inf. Regt. (1929-31); Commandant of Breslau (1932); retired 30 November 1932. Wilberg held the position of Inspector of Arms Schools, Reichswehr Ministry (1933), as well as that of one of the guiding forces behind the German Commercial Flying Schools. In 1934 he returned to active duty with the Reichs Air Ministry. Wilberg was Commander of the War College, 1 October 1935; Chief of Special Staff "W" (direction of German forces in Spain) in 1936; and Commander of the Luftwaffe Cadet School in Gatow (1936-38). Conceded by many to have been the "natural commander of the Luftwaffe," Wilberg's Jewish background is thought to have prevented him from attaining a higher post and to have led to his retirement (in the rank of General der Flieger) on 31 March 1938. This highly competent officer was killed on 20 November 1941 in an air accident.

General der Flieger Wilhelm Wimmer

Wimmer's military service began in 1909. He was a pilot during World War I, and left the Army in 1920. Reentering the service in 1921, he became active in aviation activities in the Reichswehr Ministry from 1921-1932. Transferred to the Reichs Air Ministry in the LC Office (technical matters), 1 September 1933, he was promoted to Generalmajor on 1 April 1936 and given command of air units in Air Service Area III. During World War II he commanded the 12th Air Division and Luftwaffe Forces East Prussia (1939), Air Administrative Area I and the First Air Fleet (1 February-23 August 1940), took command on 25 June 1940 of Air Administrative Area Command Belgium-Northern France (redesignated 15 June 1944 as Air Administrative Area Command XIV), and was transferred to the reserves 21 September 1944 after reputedly withdrawing in France without proper authority. Later served in the Paratroop Command. Wimmer, one of the leading German personalities in aviation organization before the war, was not given an operational command during the war. His role in the development of the GAF was nevertheless considerable.

Reichs Chancellor Karl Joseph Wirth

Member of the Center Party, Wirth was educated at Freiburg, and in 1918 became a Professor of National Science in the Technical College at Freiburg. Elected to a seat in the Baden Diet in 1913, and to a seat in the Reichstag in 1914, he became Minister of Finance for Baden, 1919, and Reichs Minister of Finance in 1920. In 1921 he became Reichs Chancellor, heading a coalition government. He favored a policy of fulfillment with respect to reparations, but lost support for this idea after the League of Nations acted in favor of Poland in partitioning Upper Silesia. Unable to build a successful coalition government he resigned in November 1922. He resigned from the Center Party in 1925, rejoined it in 1926, and died shortly thereafter.

APPENDIX II

LIST OF GAF MONOGRAPH PROJECT STUDIES

I. Published

<u>Study No.</u>	<u>Title</u>
153	The German Air Force versus Russia, 1941
154	The German Air Force versus Russia, 1942
155	The German Air Force versus Russia, 1943
160	Development of the German Air Force, 1919-1939
163	German Air Force Operations in Support of the Army
167	German Air Force Airlift Operations
173	The German Air Force General Staff
175	The Russian Air Force in the Eyes of German Commanders
176	Russian Reactions to German Airpower in World War II
177	Airpower and Russian Partisan Warfare
189	Historical Turning Points in the German Air Force War Effort

II. To Be Published (in approximately the following order)

174	Command and Leadership in the German Air Force (Goering, Milch, Jeschonnek, Udet, Wever)
161	The German Air Force versus the Allies in the Mediterranean

<u>Study No.</u>	<u>Title</u>
158	The German Air Force versus the Allies in the West (1)
159	The German Air Force versus the Allies in the West (2)
178	Problems of Fighting a Three-Front Air War
164	German Air Force Air Defense Operations
185	Effects of Allied Air Attacks on German Bases and Installations
III.	Not To Be Published but Will Be Made Available to Researchers in the Historical Division Archives
150	The German Air Force in the Spanish War
151	The German Air Force in Poland
152	The German Air Force in France and the Low Countries
157	Operation Sea Lion
162	The Battle of Crete
165	German Air Force Air Interdiction Operations
166	German Air Force Counter Air Operations
168	German Air Force Air-Sea Rescue Operations
169	Training in the German Air Force
170	Procurement in the German Air Force
171	Intelligence in the German Air Force
172	German Air Force Medicine

<u>Study No.</u>	<u>Title</u>
179	Problems of Waging a Day and Night Defensive Air War
181	The Problem of Air Superiority in the Battle with Allied Strategic Air Forces
182	Fighter-Bomber Operations in Situations of Air Inferiority
183	Analysis of Specialized Anglo-American Techniques
184	Effects of Allied Air Attacks on German Divisional and Army Organizations on the Battle Fronts
186	The German Air Force System of Target Analysis
187	The German Air Force System of Weapons Selection
188	German Civil Air Defense
190	The Organization of the German Air Force High Command and Higher Echelon Headquarters Within the German Air Force
194	Development of German Antiaircraft Weapons and Equipment up to 1945
Extra Study	The Radio Intercept Service of the German Air Force

LIST OF CHARTS

1. Offices within the Army Troop Office dealing with Air Matters, 1 March 1920 - 31 March 1927.
2. Offices within the Army Troop Office dealing with Air Matters, 1 April 1927 - 30 September 1929.
3. Offices within the Army Troop Office dealing with Air Matters, 1 October 1929 - 31 March 1933.
4. Air Technical Activities within the Army Ordnance Office, 1 October 1929 - 31 March 1933.
5. The Air Defense Office in the Reichswehr Ministry, 1 April 1933.
6. The Reichs Aviation Ministry (RLM), 1 September 1933.
7. The Reichs Aviation Ministry (RLM), 1933 - 1937.
8. Organization of the Reichs Aviation Ministry, 1 April 1934.
9. Organization of the Reichs Aviation Ministry after the Implementation of the new Service Law and Open Rearmament, 16 March 1935.
10. Organization of the Reichs Aviation Ministry, 1936.
11. Organization of the Luftwaffe General Staff after 1 June 1937.
12. Organization of the Luftwaffe General Staff after 1 February 1938.
13. Organization of the Luftwaffe Signal Communications Service after 1 July 1938.
14. The Top Command Positions in the Luftwaffe, 28 August 1939.

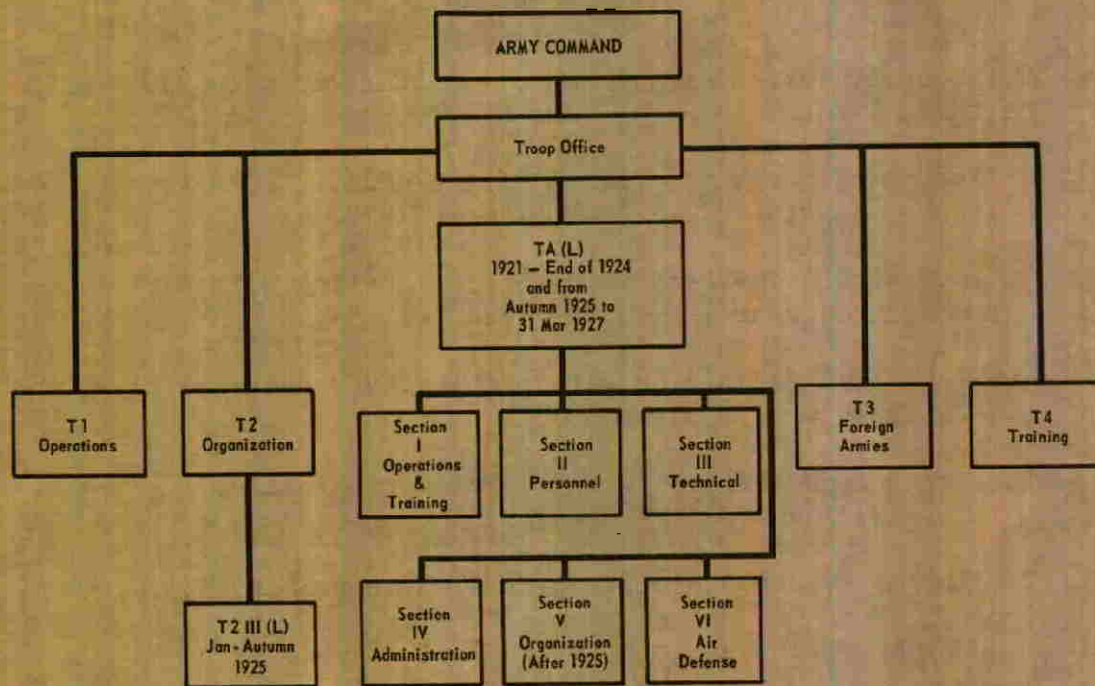


Chart 1

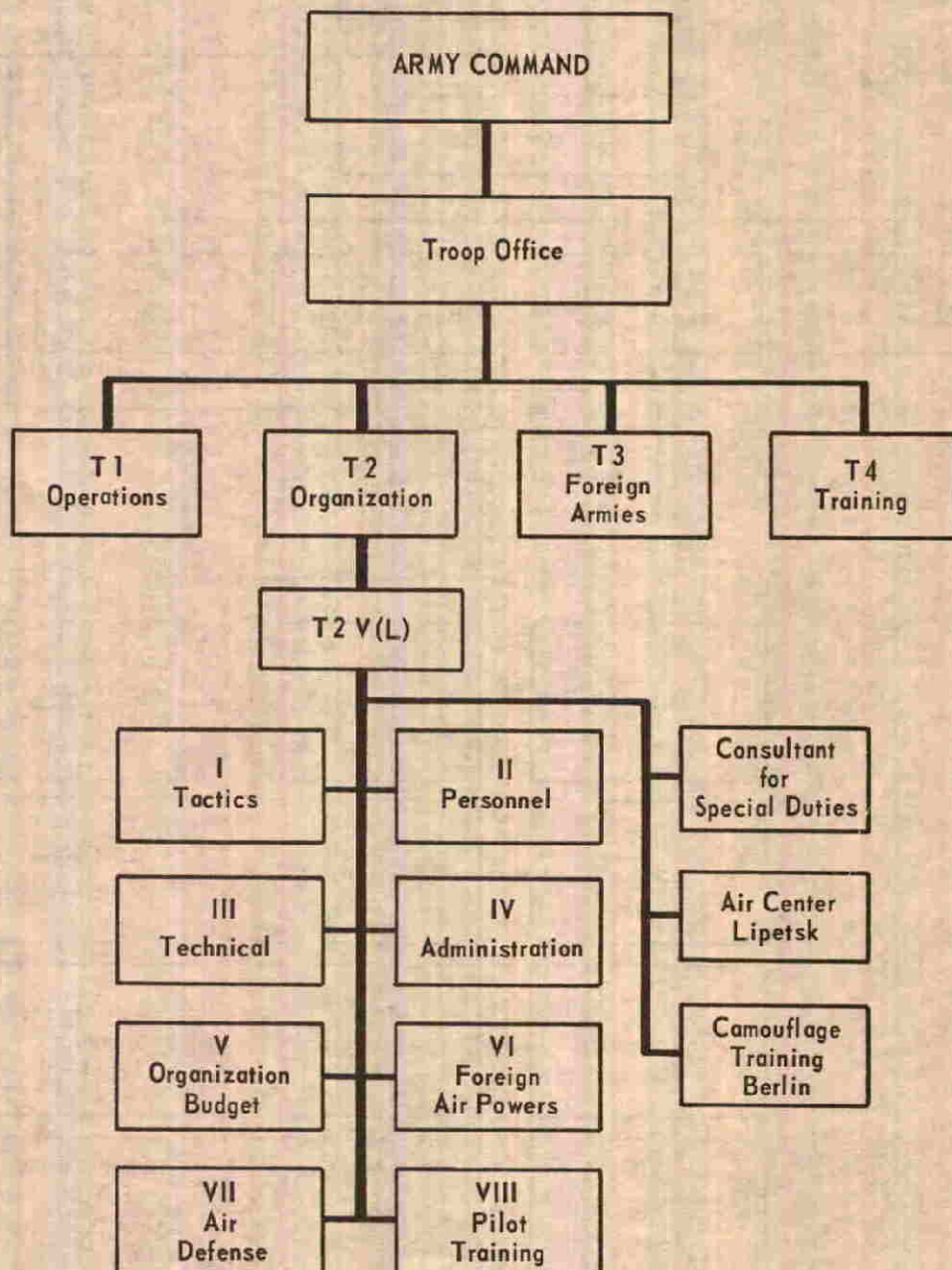


Chart 2

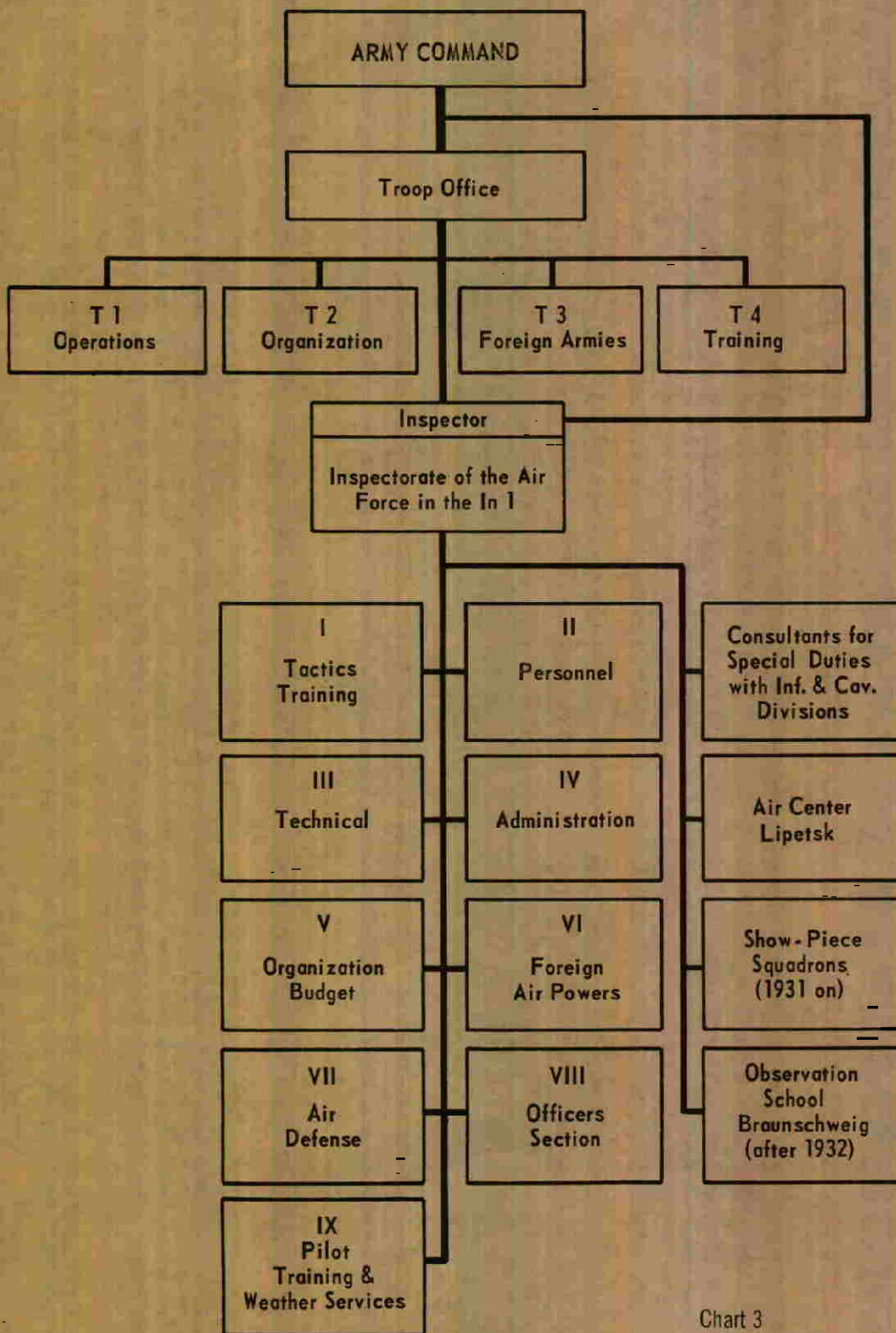


Chart 3

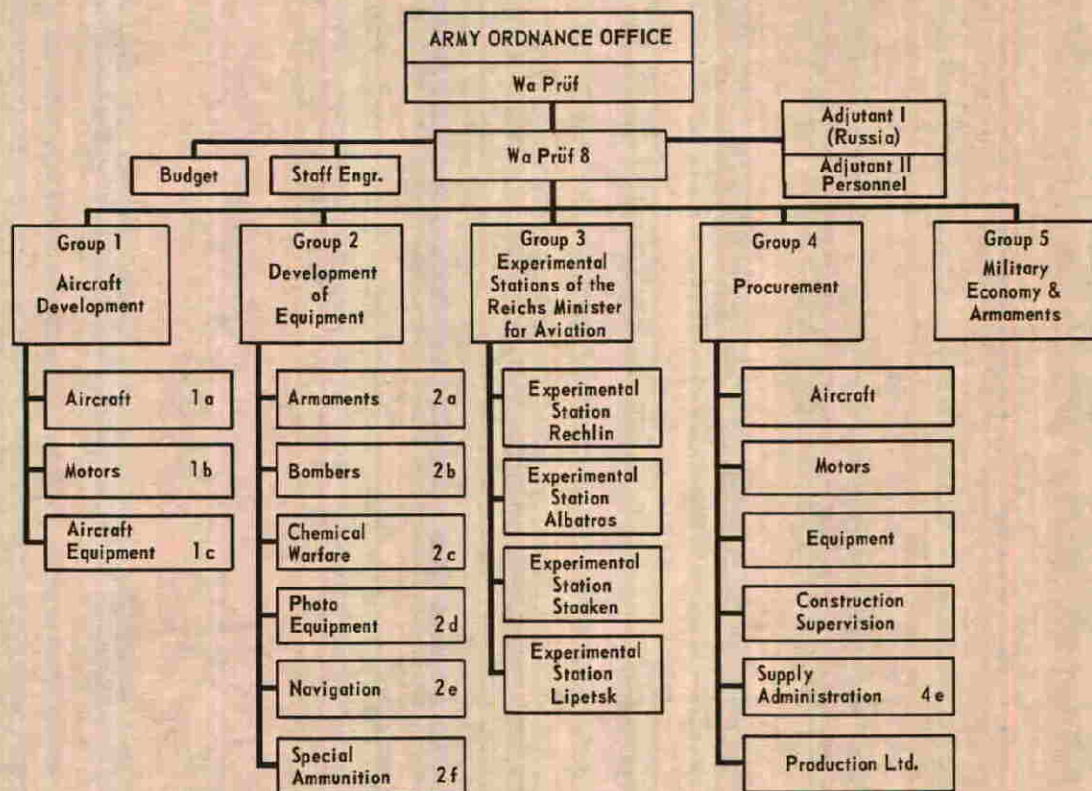


Chart 4

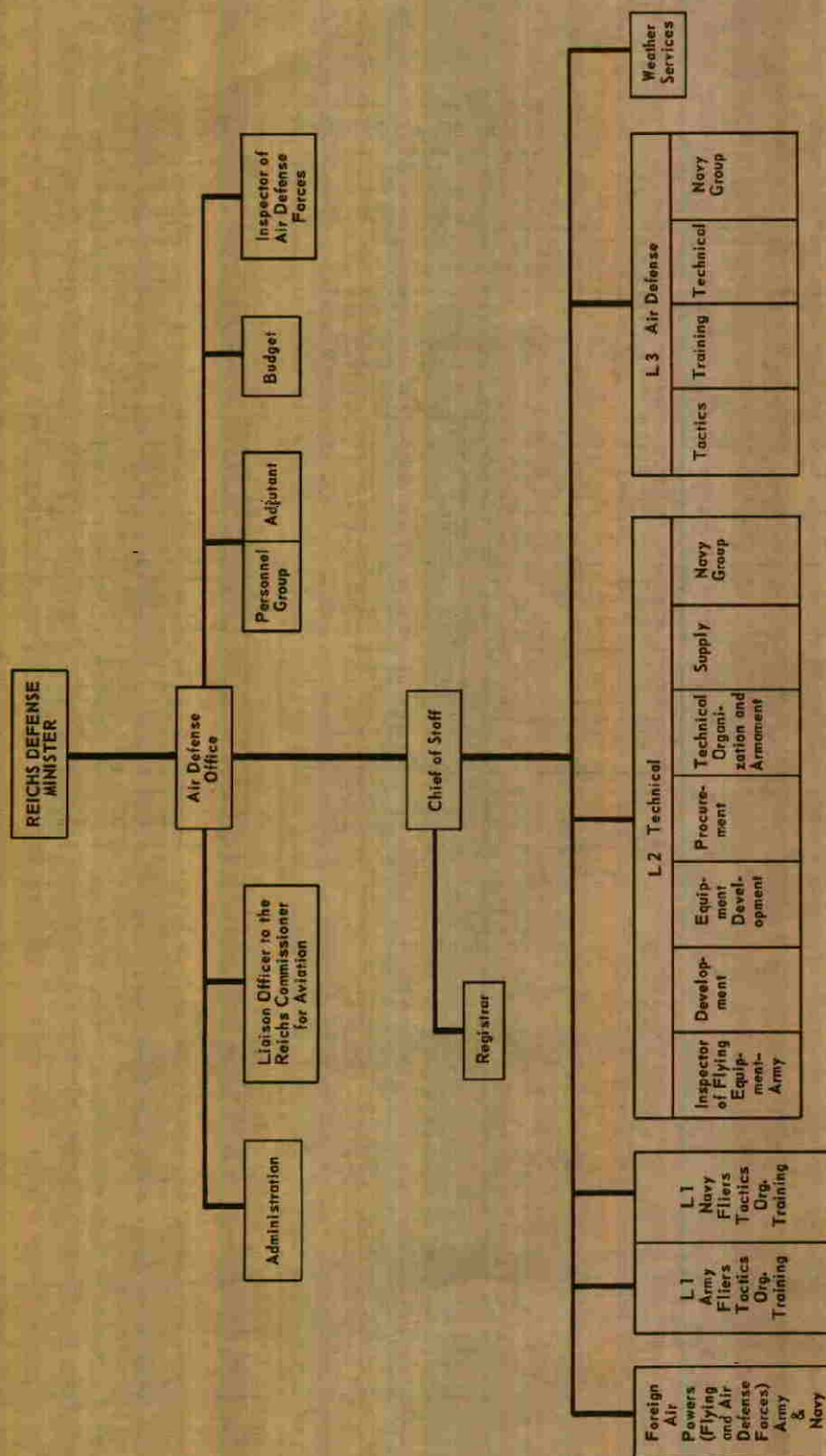


Chart 5

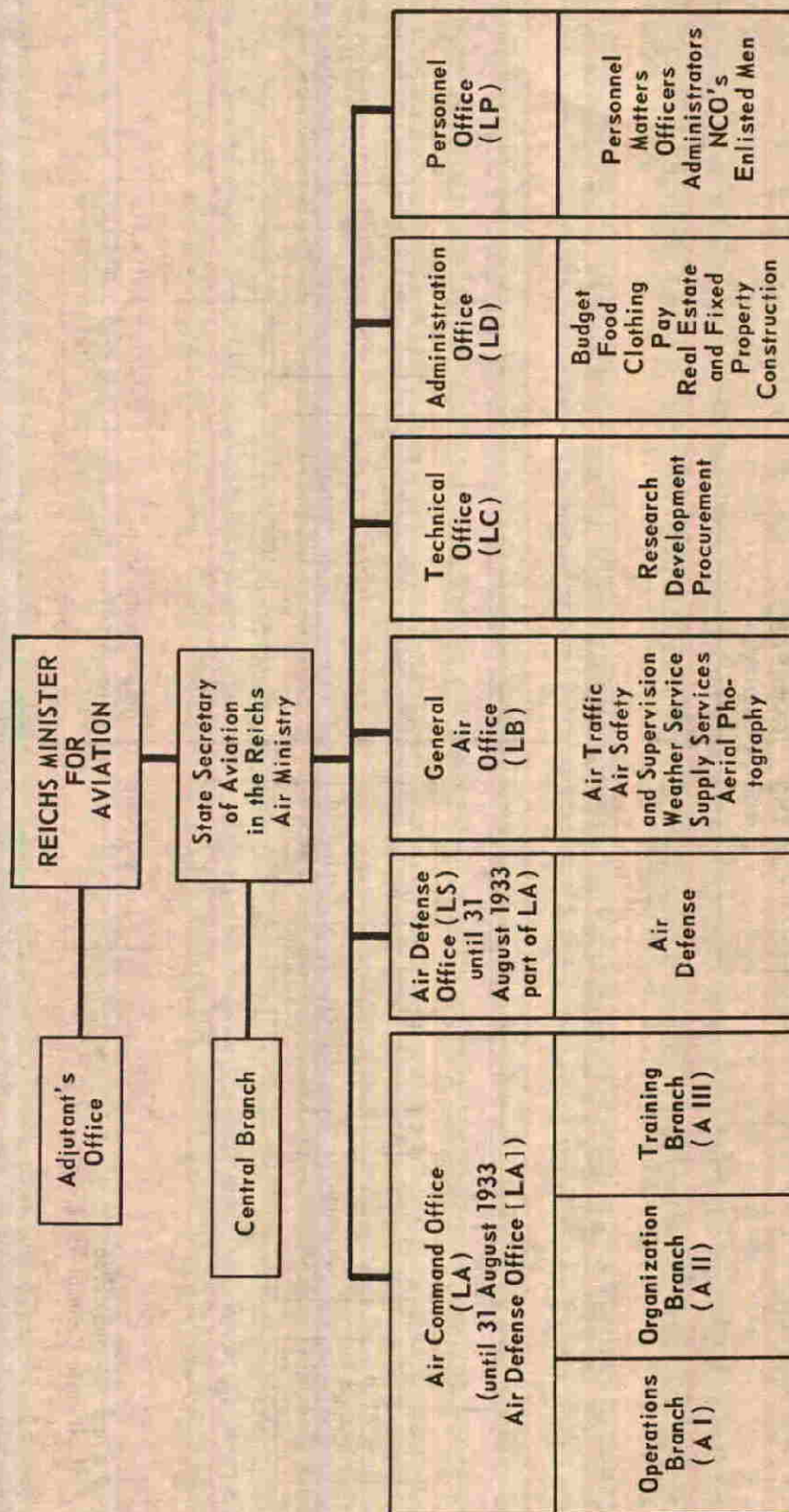


Chart 6

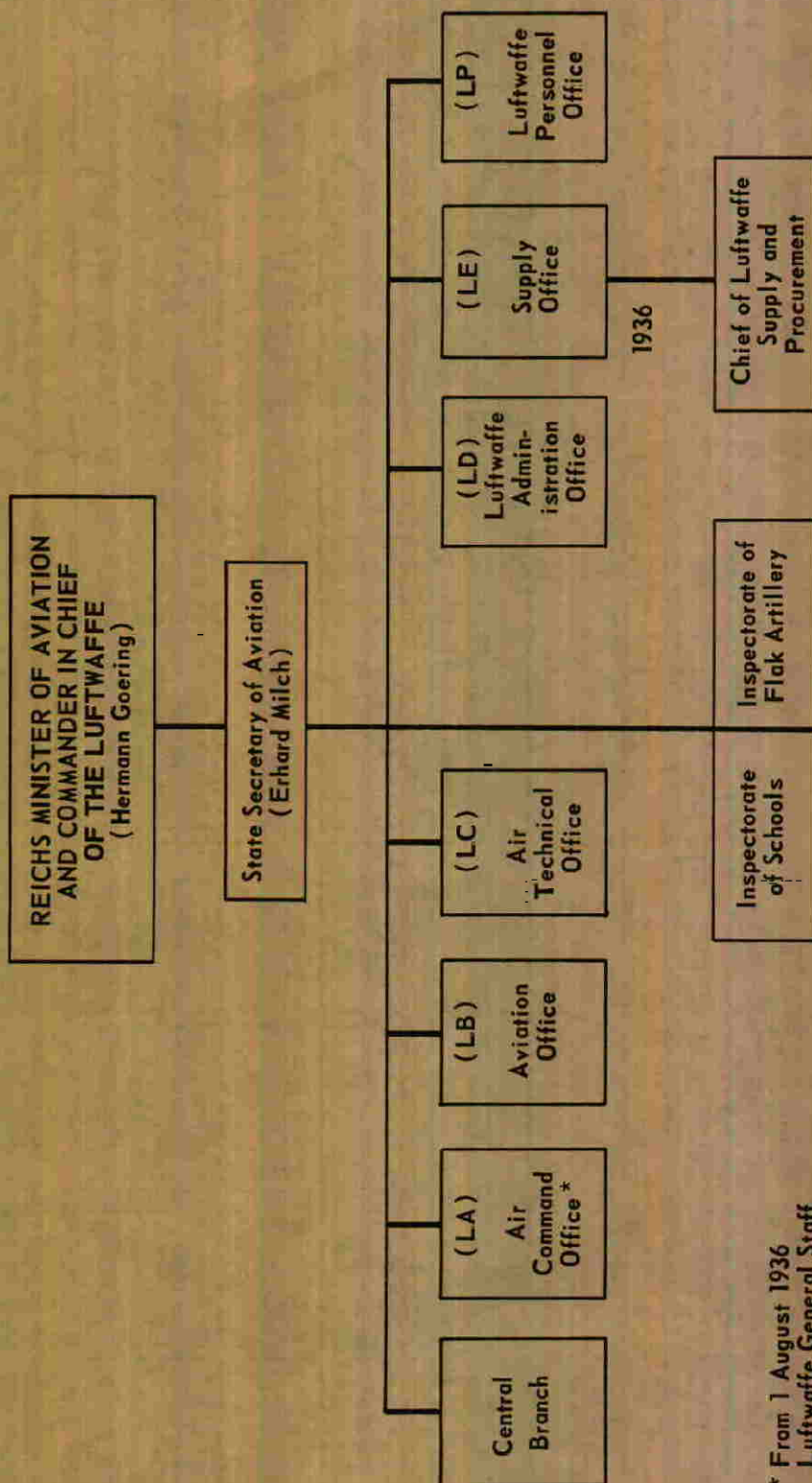


Chart 7

* From 1 August 1936
Luftwaffe General Staff

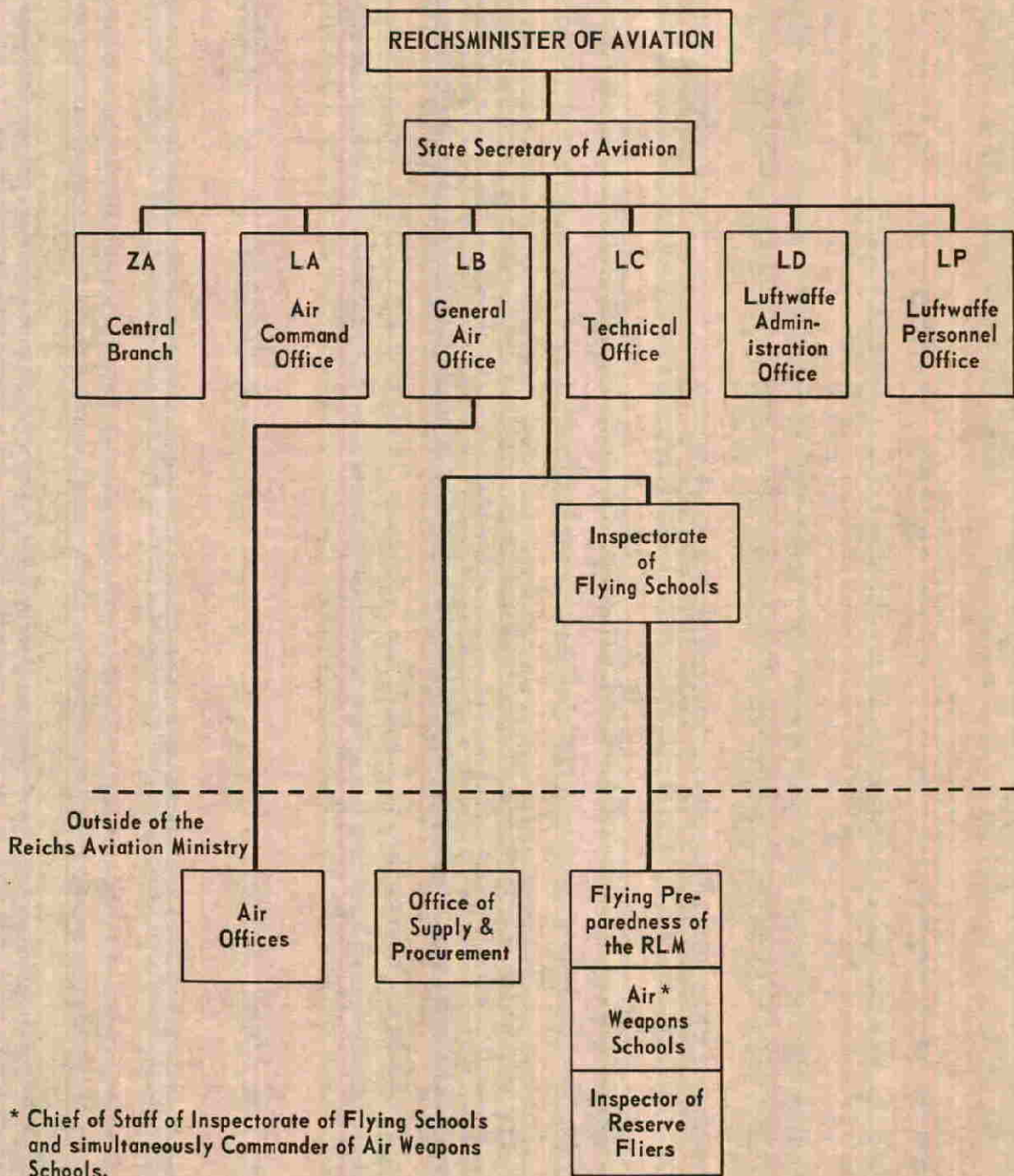
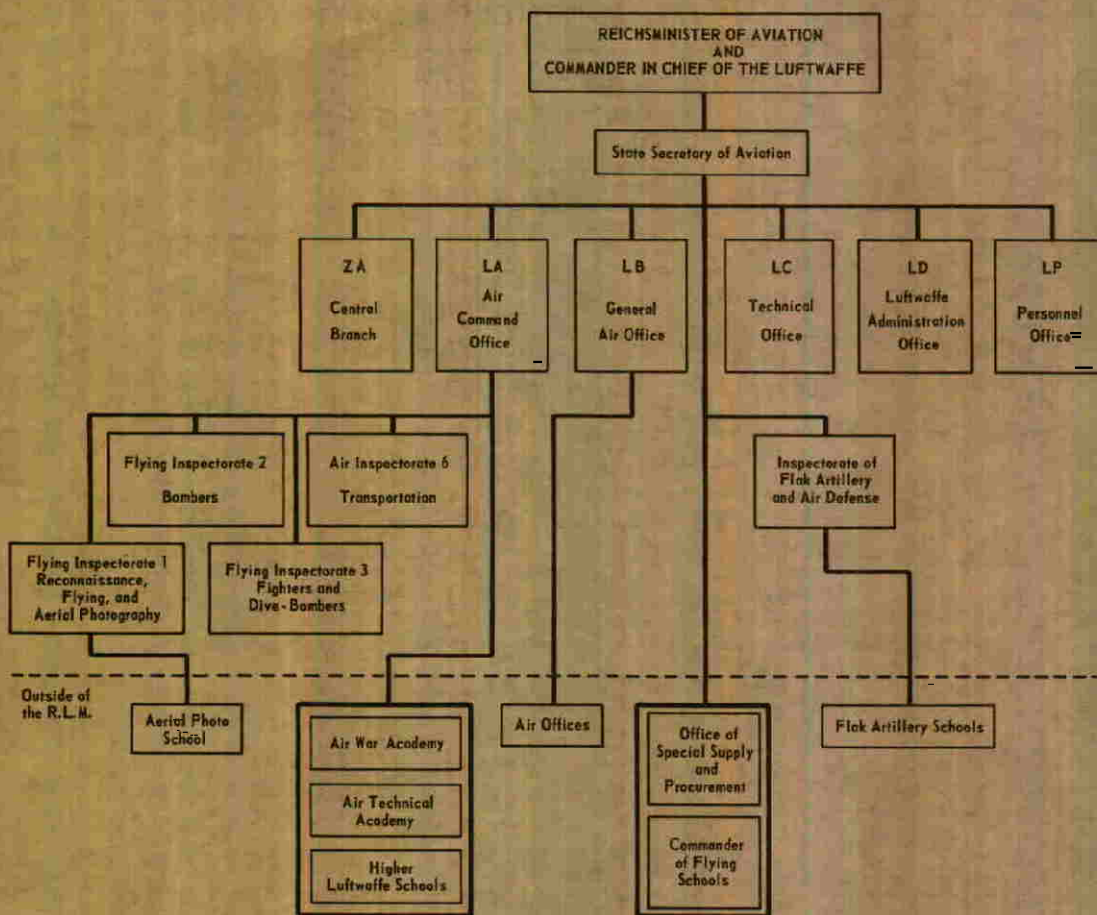
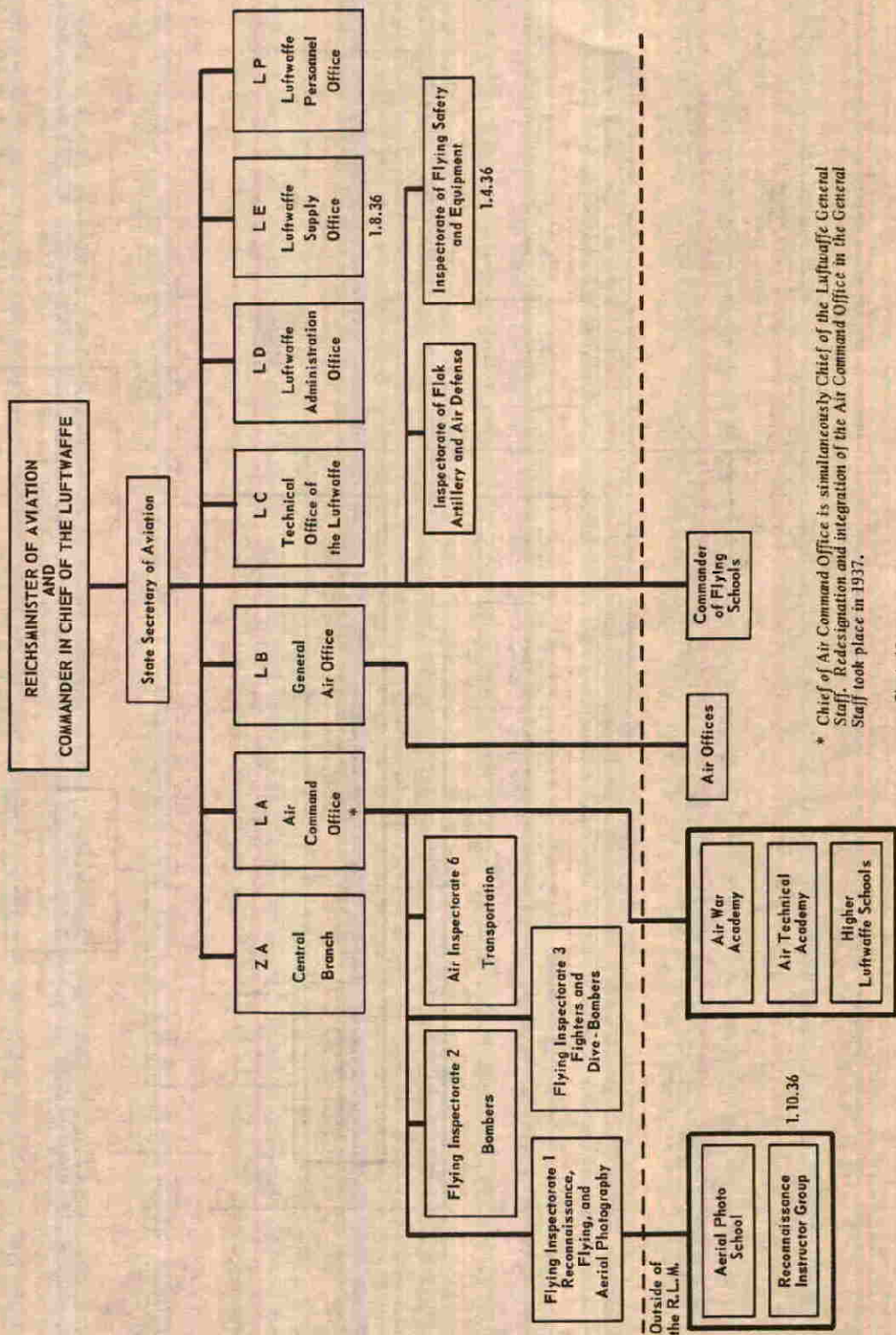


Chart 8



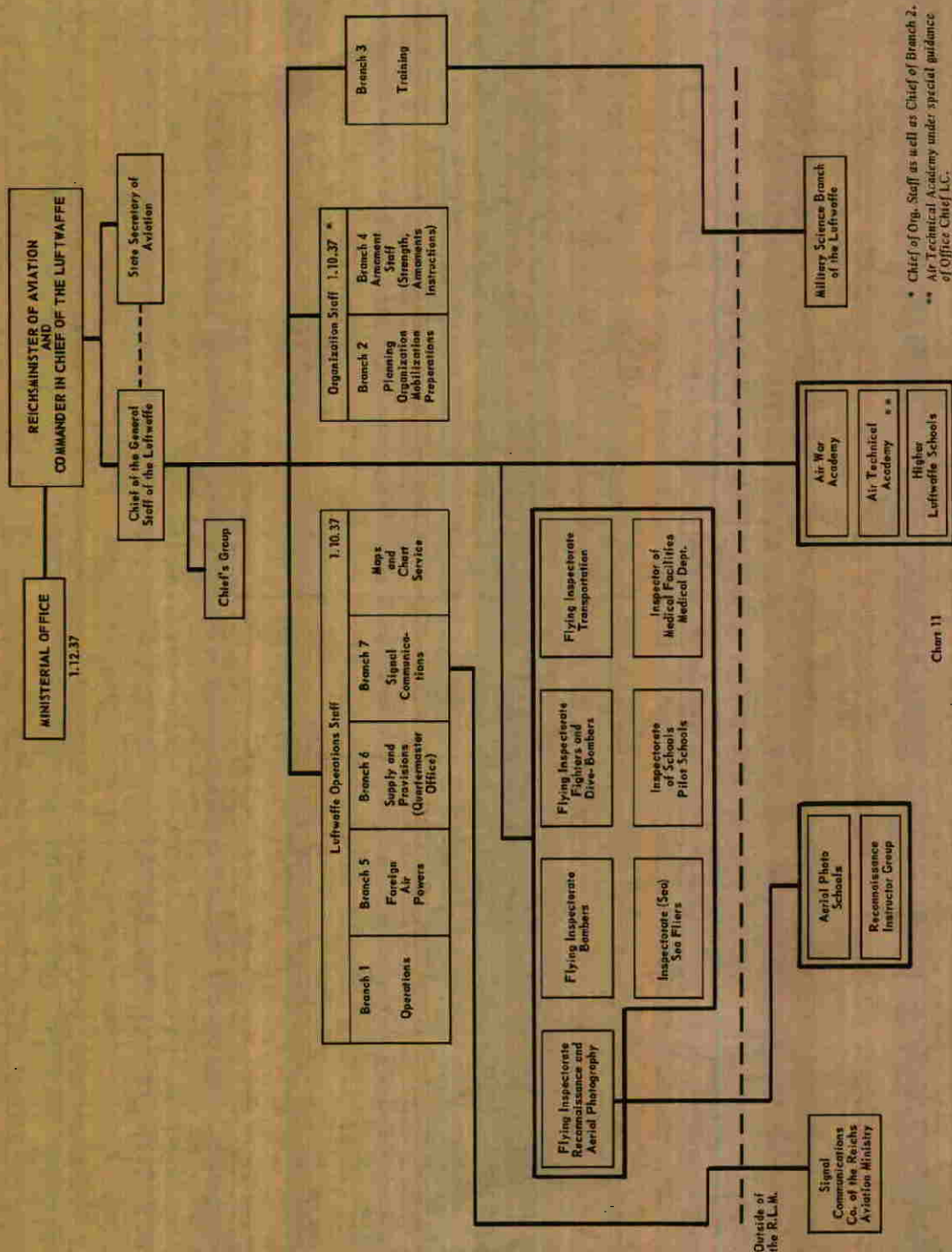
1.11.35

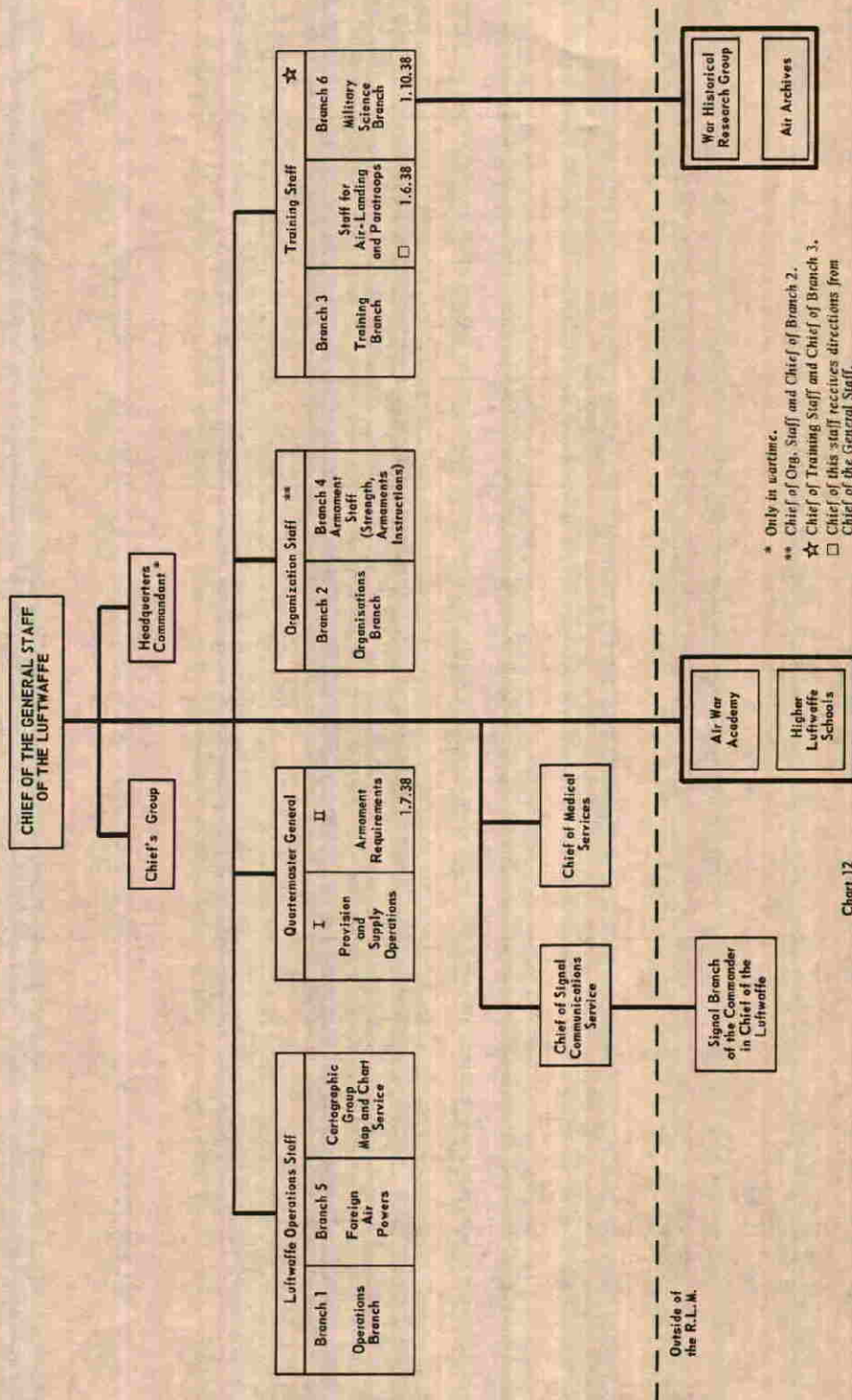
Chart 9

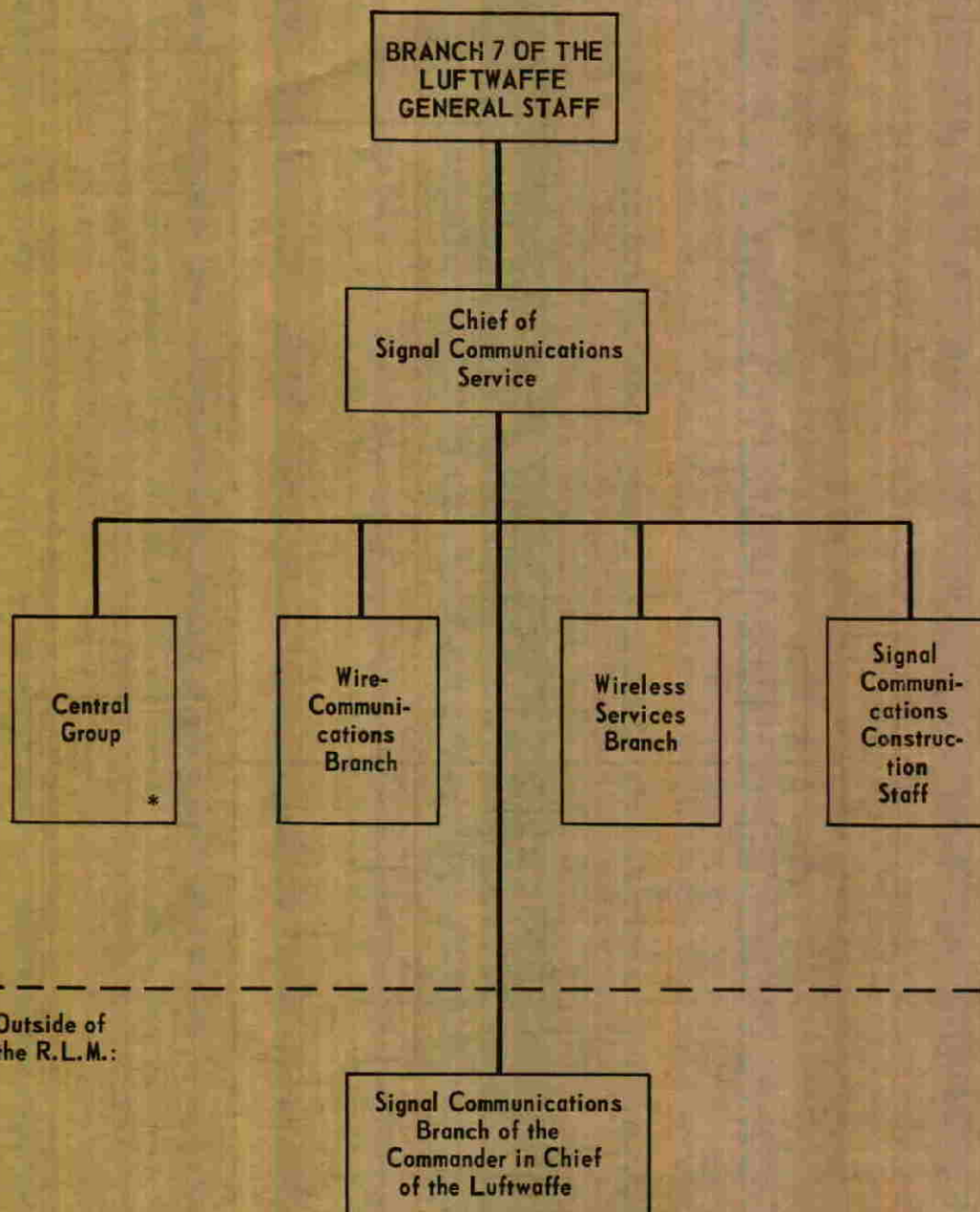


* Chief of Air Command Office is simultaneously Chief of the Luftwaffe General Staff. Redesignation and integration of the Air Command Office in the General Staff took place in 1937.

Chart 10







* 1 Consultant of the Central Group with Branch 1 of the Luftwaffe General Staff.

Chart 13

258

